Railways of Australia

NETWORK

Vol. 15 No. 11 December 1978/January 1979 Price: 50 cents

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VICTORIAN RAILWAYS X Class 2200/2000 HP

COMALCO-WEIPA Model GT26C 3300/3000 HP

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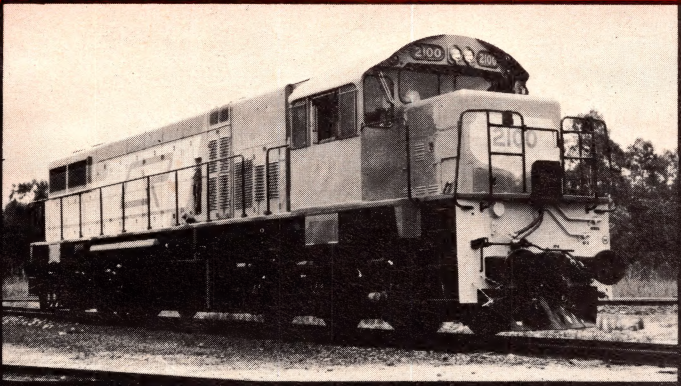

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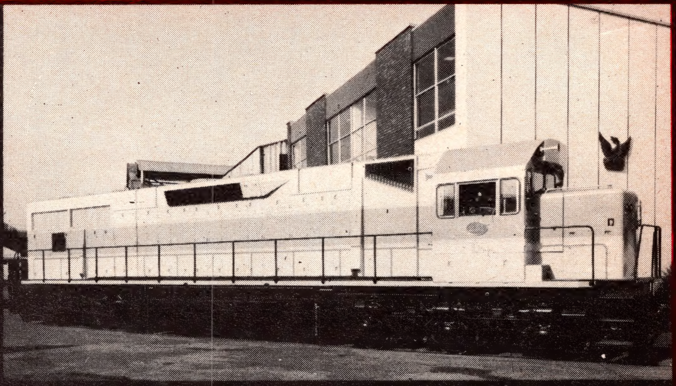

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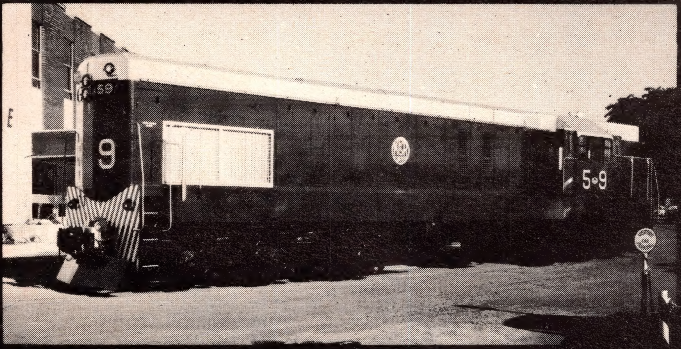

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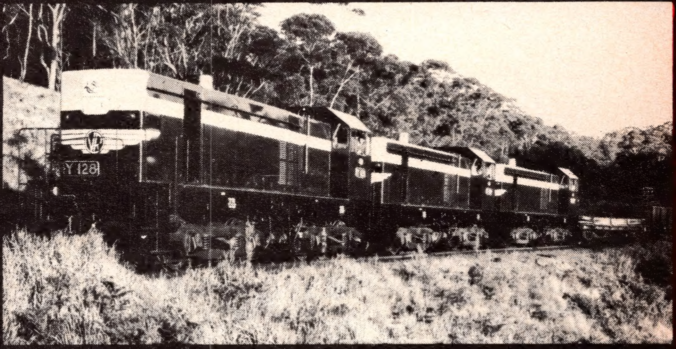

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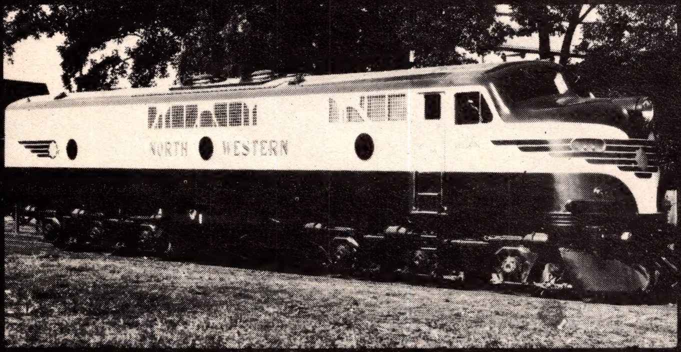

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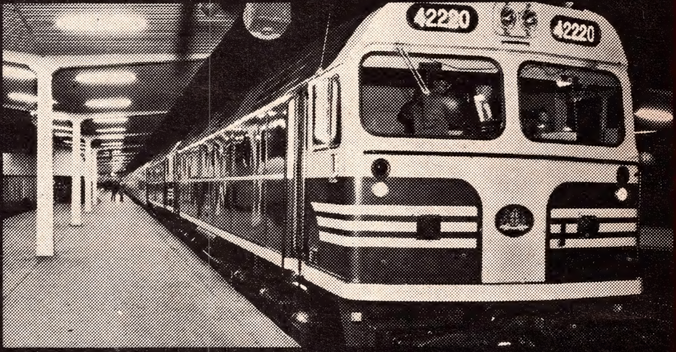

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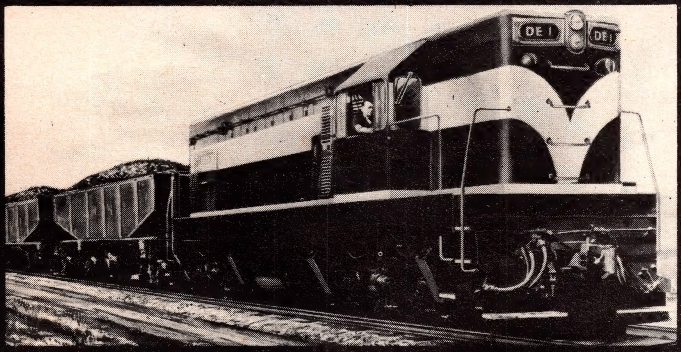

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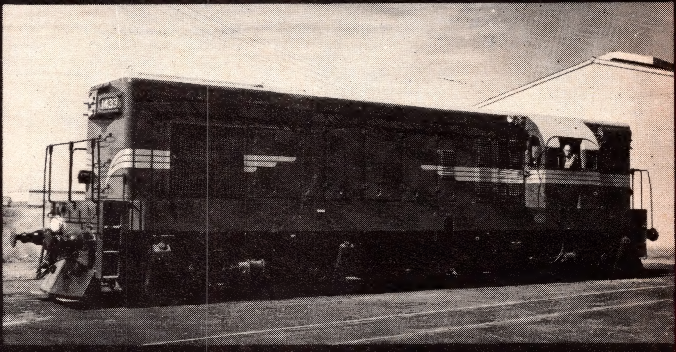

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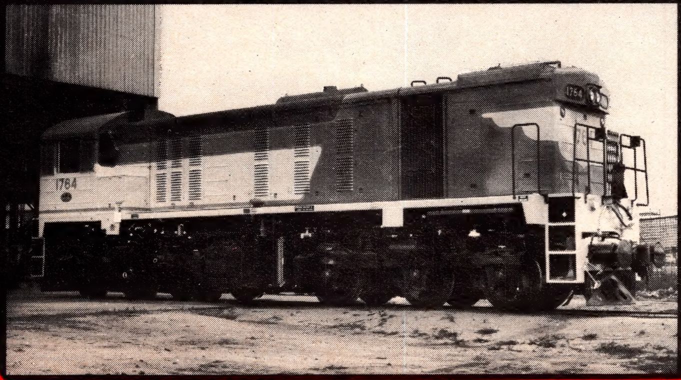

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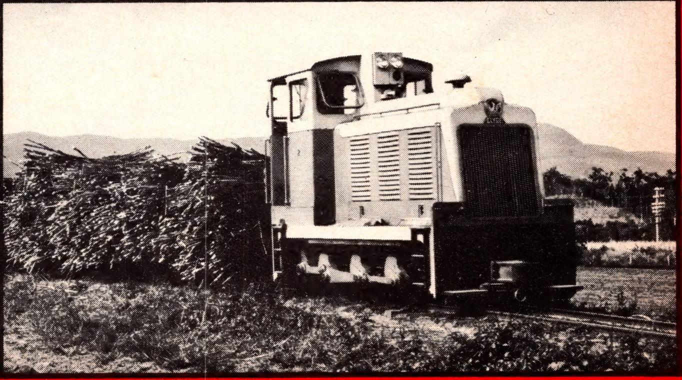

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A view on Deutsche Bundesbahn (German Federal Railways) in the Rhineland.
A DB assessment of future rail developments will appear in 'Network' shortly.

Railways of Australia
NETWORK
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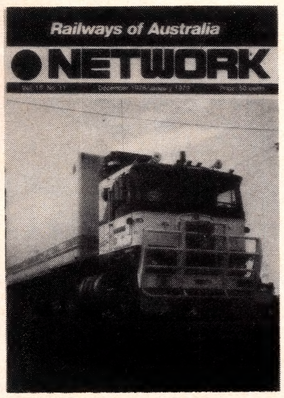

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- Queensland Railways
- Victorian Railways
- Western Australian Government Railways

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OUR COVER

Pantechnicon and prime mover, bound for Western Australia, loaded on flat wagon at the ANR piggyback loading area, Port Augusta, SA.

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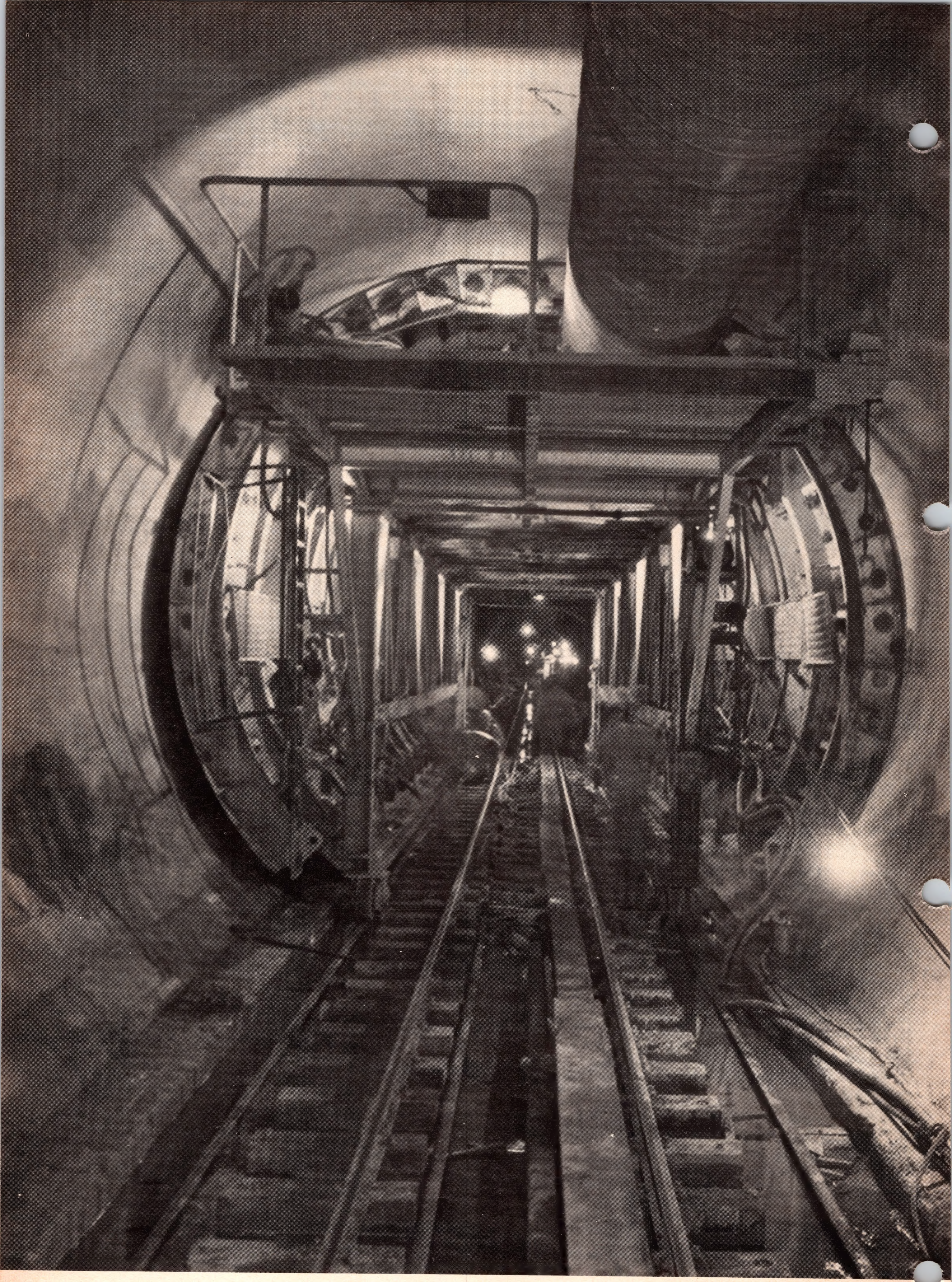

The concrete profile machine lining the Kaimai tunnel.

ROA
Railways of Australia
NETWORK

From the Executive Director's Desk

Corporate Bigamy" — an occupational hazard

When we review the results of 1978, perhaps we should consider not only the corporate result but also our personal result.

Whilst most of us have ambition to succeed in our professional roles we must weigh the cost of success. At times it may appear strange to us that a colleague may decline promotion which, of course, is accompanied by added responsibility. Status and material gain are not always measurements of success.

Investigation by a New York industrial psychologist revealed that a large percentage of executives suffer from "corporate bigamy". This is an insidious occupational ailment — the double marriage of an executive to both his job and his family. The symptoms are common, and include long hours of working at home in the evenings and the week-end, frequent trips away from home, and a sorry history of missed anniversaries and school functions. Investigation revealed that the higher up the corporate tree an executive goes the more acute the symptoms usually become and that the executive who fails to recognise and alleviate his corporate bigamy problem risks his mental and physical health in addition to his family relationship.

Management experts who have been invited to study the above-mentioned problem indicate that to some degree the executive's problem is self-inflicted in that too often the executive fails to delegate and to determine priorities.

Many people are possessed with life's fine art of being able to distinguish between things that are important and things that are not. In real life, the need to discriminate between the important and the unimportant is always before us.

Psychologists maintain that people have an innate need for completion — specific proof that a course of action has reached a definite conclusion, and that one of the most mentally and exhausting experiences is having to live constantly with all sorts of loose ends. The exhaustion that many executives feel at the end of the day is often more a product of the way pressures are handled than it is a product of the pressures themselves.

We are also told that the application of Pareto's Law, which is a natural law dealing with cause and effect, could help us in our problem areas. This law was formulated by Vilfredo Pareto, an Italian economist and sociologist, who identified an average 20/80 ratio in any cause and effect relationship — 80% of the effects will come from 20% of the possible causes.

Application of Pareto's Law reveals that generally 20% of the decisions made by an executive during a day could have been made by another member of his staff without any adverse effect on the organisation; that 20% of his staff make 80% of any errors that occur; that 20% of his staff are responsible for 80% of the absenteeism.

While the exact percentages may change, the principle holds true. The key to the problem is to identify the offending 20% and correct it.

Let us look forward to 1979 with enthusiasm and zest, but we must remember that many of life's problems do not matter nearly as much as they seem to if we cultivate the art of perceiving the relative importance of matters.

We have been reminded, however, that "life isn't meant to be easy".

B. M. HOGAN
Executive Director

Solar Energy for ANR Communications Equipment

Australian National Railways has awarded a half million dollar contract to Lucas Industries Australia Ltd for the supply and installation of solar energy equipment for use in railway communications along the 831 km Tarcoola-Alice Springs railway. It represents Australia's largest commercial application of solar energy for a communication system.

ANR's General Manager, Mr V. H. Dyason, said the Lucas solar cell modules would recharge batteries providing power for the line communications equipment and added: "We believe solar power will eliminate costly diesel fuelling and maintenance procedures on the new line."

The communications system planned for the new Tarcoola-Alice Springs line is an integrated microwave-VHF radio system with 72-channel capacity, of which 25 channels will be used initially.

The system will have 26 repeater stations at intervals of about 35 kilometres, with terminal stations located at Tarcoola and Alice Springs. It will be linked to the existing ANR open-wire communications network at Tarcoola, Port Augusta and Alice Springs. The control centre will be located at Port Augusta.

(cont. on p. 20)

1967 was a great year for wrought steel wheels

COMSTEEL began to use the VACUUM DEGASSING process to refine liquid steel.

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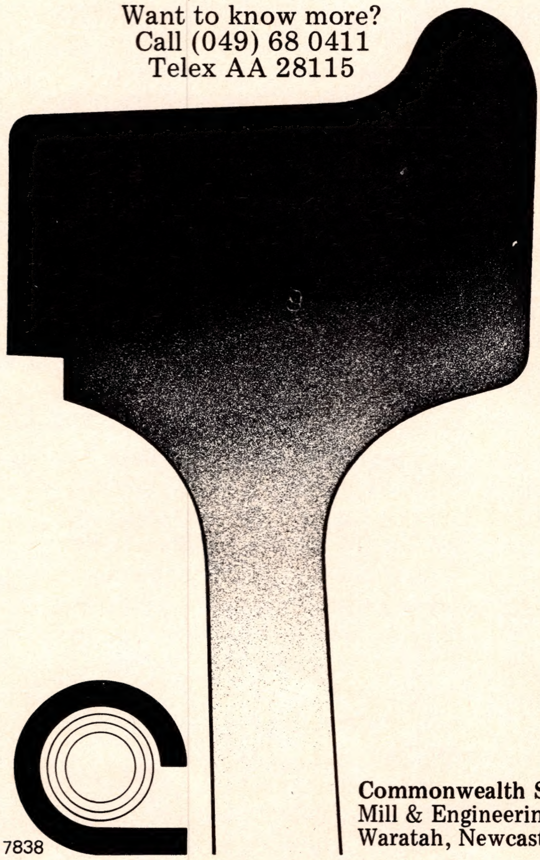

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Transport drivers can accompany their vehicles across the Nullarbor in a special coach.

Piggyback to the West

Australian National Railways is making an all-out effort to win road hauliers over to rail with a new, improved piggyback service across the 1700 km Trans-Australian Railway.

Present estimates indicate that up to 1000 heavy road vehicles operate regularly every month through Port Augusta in South Australia to points in Western Australia via the Eyre Highway.

Faster schedules, attractive freight rates and special arrangements whereby transport drivers accompany their vehicles in a special rail coach attached to the freight train have been introduced.

Pantechnicons and trailers, with or without prime movers, are being accepted for rail transport to the West at ANR's Northern Region operations centre of Port Augusta each day.

Semi-trailer traffic is being directed on to the fast freight trains which depart for Perth daily at 9.30 am and 11 pm. In the past, piggyback traffic was held for the night train only. ANR Marketing Manager, Mr Tom Snigg, said the new piggyback service provided an improved transit time of up to twelve hours. "We are also continuing to offer the piggyback service on the daily night train for those road hauliers who cannot make the morning departure," he added.

Tom Snigg is enthusiastic about the piggyback service, and believes the potential for rail travel is nearly unlimited.

"The recent rise in fuel costs have made the road to profitability even more difficult for the long-distance road operator. We believe ANR can take a road truck into Western Australia for less cost than it would be for transport operators to drive from Port Augusta to Kalgoorlie. We have set out to move road trailers and the like by rail at a cheaper rate than what may be termed over-the-road costs, and we have, in fact, achieved this aim."

This is not surprising when the inherent efficiency of railways in the area of energy utilisation is considered. One diesel locomotive is capable of hauling a similar load to that hauled by between 30 and 60 heavy duty road units.

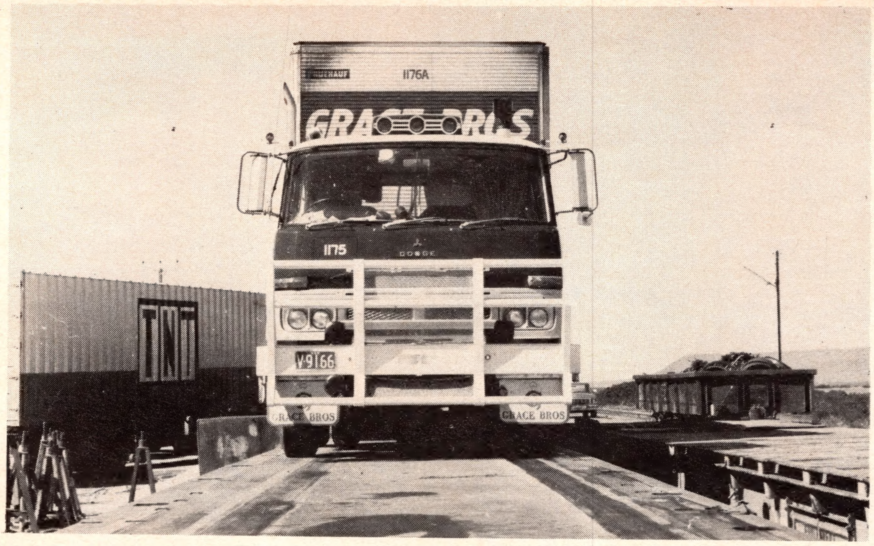
The Australian Bureau of Transport Economics has estimated that rail has a cost advantage in freight haulage for distances greater than about 300 km. The railways also have a natural advantage over road for the carriage of bulk traffic such as coal and grain over virtually any distances.

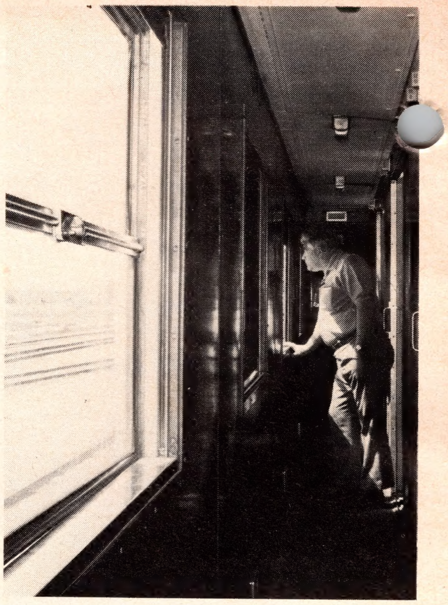
Australia has a relatively small population concentrated in widely separated major centres. The distances between these centres, such as the Eastern States and Western Australia, gives rail a natural advantage over its land competitor, the road haulage industry.

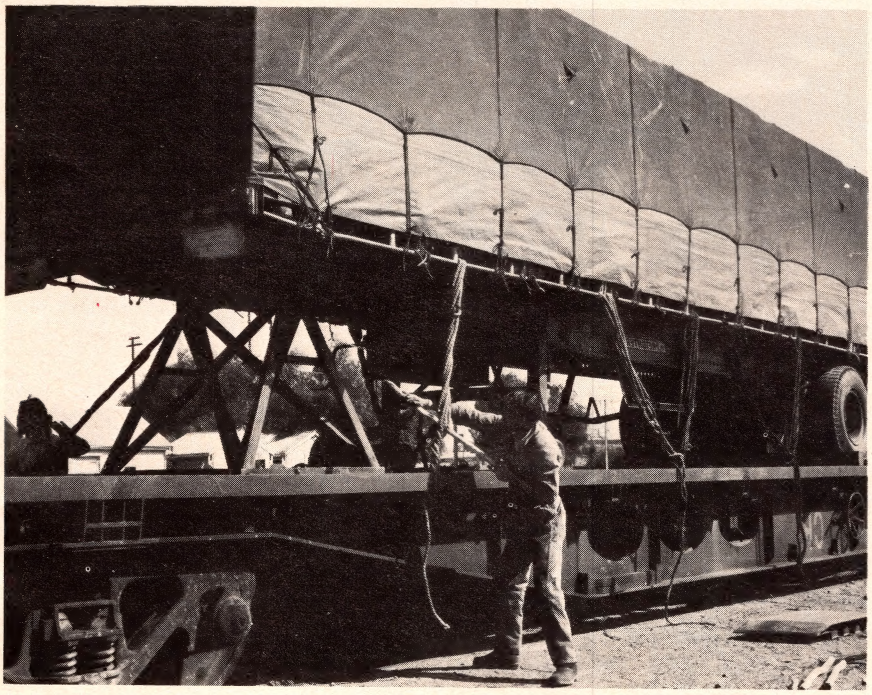
Mr Snigg said ANR's piggyback service provided a co-ordinated transport service which combined railway dependability with highway flexibility. "The service inevitably benefits the road haulier, the railways and their customers."

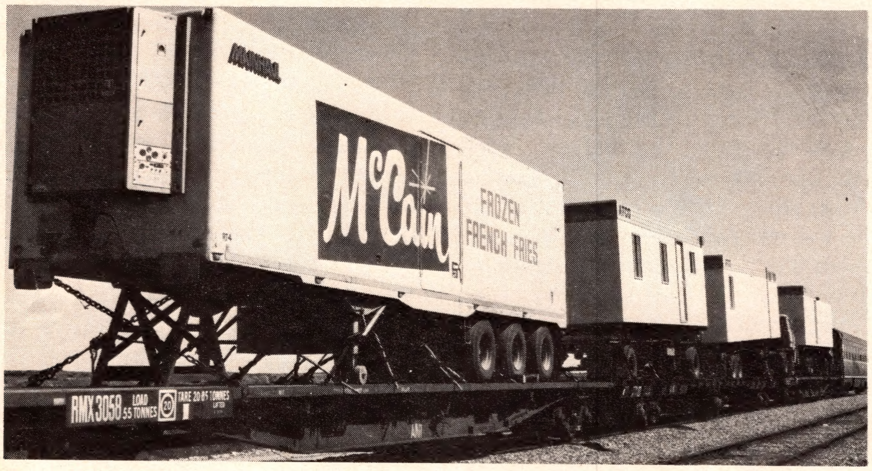
Australian National Railways, in its former guise of Commonwealth Railways, pioneered rail piggyback traffic in Australia more than twenty years ago.

Piggyback traffic, the movement of one type of carrier vehicle more or less literally upon the back of another type of carrier, started in America in 1937 when Newhaven Railroads inaugurated rail movement of road trailers between New York and Boston. By 1952 this particular railway was carrying 50,000 units by the piggyback method.









Top left: Loading road vehicles for Piggyback rail transit is a quick and easy operation.

Top right: Fuel costs, tyre wear, breakdowns and long hours of driving are things of the past for drivers using the ANR Piggyback Service.

Centre: Lashing down a load during the final stage of the loading operation.

Bottom: Portion of a loaded Piggyback train ready to move from Port Augusta across the 1700 km Trans-Australian Railway.

Today, piggyback operations are widely used by many railways throughout the world as road operators grow to appreciate the resultant savings in tyre wear, fuel costs, prime mover wear and tear and, above all, the more rapid and cheaper form of transportation provided by a co-ordinated road/rail service.

One of the unique features of the Trans-Australian piggyback service is the arrangement for drivers to accompany their vehicles.

A coach providing sleeping and cooking facilities for drivers is attached to the piggyback freight trains between Port Augusta and Kalgoorlie. Instead of two days constant driving, the road operators can enjoy the sights of the Trans-Australian Railway in relaxed surroundings. For drivers wanting even a little more comfort than the employees' coach, berths on the crack "Trans-Australian" and "Indian-Pacific" passenger trains are also available.

Mr Snigg said one important aspect of the improved piggyback service was the easing of height-weight ratios for trailers and vans to be loaded onto rail flat wagons. "We can move almost anything with or without prime movers."

In Tom Snigg's words ANR's new piggyback service to the west is really on the move: "Piggyback is faster, the service is good, rates are good and there is less wear and tear on men and machines."

PTC's $68 Million Workshop Modernisation Programme

An artist's impression of the new Wagon Repair Workshop to be built at Bathurst. The existing Amenities building is in the left foreground.

Workshop modernisation within the Public Transport Commission of NSW has been given insufficient attention in the past and it is likely that this was because of the problems and complexity of the task of changing methods of working. However, because of the long-term run-down of services, steps are now being taken to see that maintenance is improved in the older workshops.

The reasons for workshop modernisation are fourfold, namely:

(a) The deteriorating condition of the PTC fleet. This problem was described in a paper presented to the Institute of Production Engineers, titled 'Public Transport Dilemma' (extracts from which were included in the July 1978 issue of *Network*).

(b) The lack of modern facilities to properly maintain the equipment.

(c) The unsatisfactory working conditions of the PTC's workshops.

(d) The lack of efficiency of operation of the shops which, because they have not been modernised, have a high labour intensity.

Consultant's Report

The 1974 report by consultants, Atkins-Meinhardt, predicted that approximately $75 million, at today's prices, would have to be spent and the report which they prepared was written after some consultation with officers of the Commission, but with no consultation at shop floor level.

Now that the Equipment Maintenance and Workshop Review Committee has basically completed its first stage review of Commission needs, it is clear that the fleet sizes predicted by Atkins-Meinhardt were far in excess of what the Review Committee collectively agree to be a reasonable forecast up to 1990. It is worth stressing at this point that there has been a high degree of agreement between PTC officers and Union representatives of what is likely to be demanded in the future from Commission workshops.

The Atkins-Meinhardt approach was that the expected efficiency gains in the workshops would be sufficient to warrant most, if not all, of the capital expenditure required to modernise the shops. A construction programme started in 1975 was based on the Atkins-Meinhardt report, and Clyde was the first area in which building work was committed.

Despite a presentation to the Combined Unions and frequent consultation with them, the occupation and fitting out of the new Clyde workshop was banned until a few months ago. These bans have been lifted for the present and it has been agreed that there should be a twelve-month settling down period during which time more of the new equipment will be installed, and the backlog of work on wagons will be tackled systematically.

Review Committee

Once the Commission had recognised the problems and short-comings of the Atkins-Meinhardt report, a major review was commenced. The NSW Minister for Transport gave strong support to the new review, and the Workshop Modernisation Review Committee started its deliberations in August 1977. Many points of view have been brought forward at its meetings, which have been attended by Union representatives, and these have been discussed, resolved, and settled. All matters of concern to both parties have been thrashed out. Although it has taken time, an agreed format for the type of consultation has now emerged and no issue of significance raised by Union representatives has been overlooked.

The Workshop Modernisation Review Committee was set up with four PTC Commissioners; the Associate Commissioner; General

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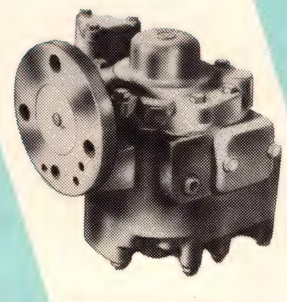
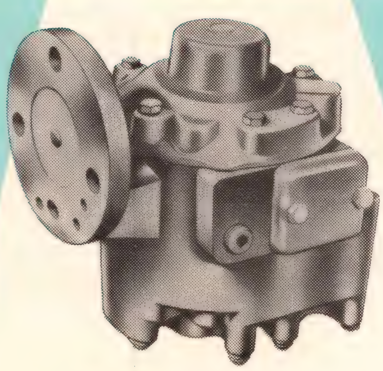
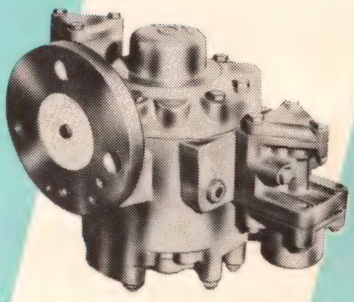


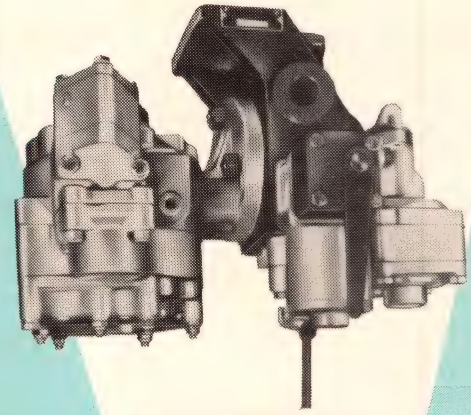
WPI-WFI – With inshot and reduction ensuring for passenger or freight stock.



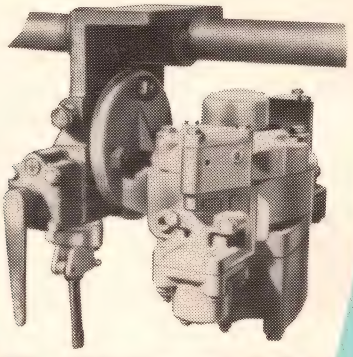
WP – Simple direct release valve for passenger stock.



WF3 – With inshot reduction ensuring and retarded recharge for freight stock.



WF Control Unit for empty load relayed freight braking.



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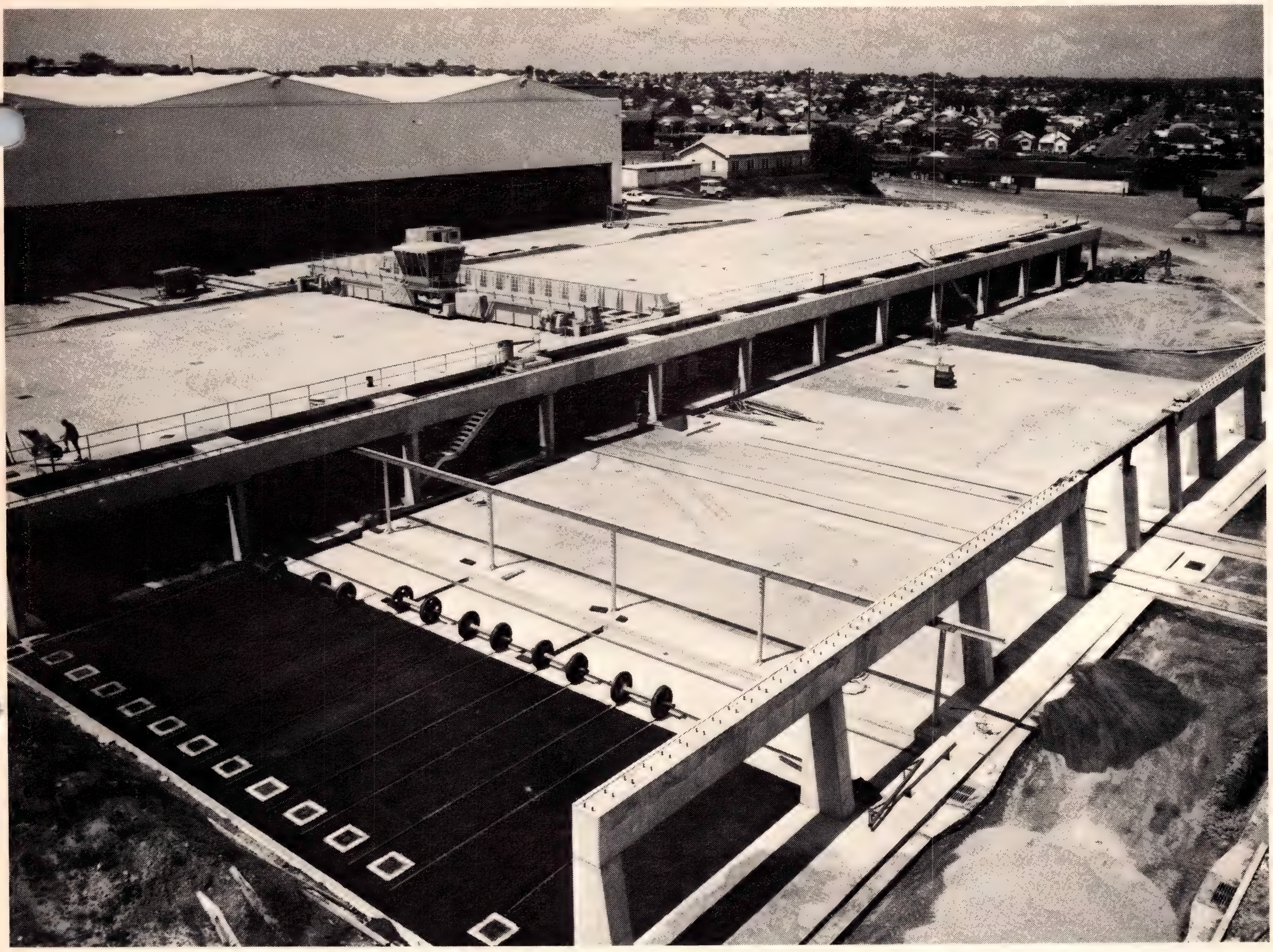


Western end of the General Repair Shop, Clyde, showing the two-level construction, together with the wagon traverser and open crane yard.

Manager, Workshops; Executive Engineer, Workshop Modernisation; and twelve Union representatives nominated by the Labor Council of New South Wales, of whom six were from the Council and another six were from the shop floor.

The Committee has been assisted by numerous persons within the Commission and by consultants to obtain facts and assist in the analysis of the problems involved. Both the Union representatives and the Commission officers, as members of the Committee, have separate meetings to clarify the matters of concern to each group, but on the clear understanding that all problems which affect both parties are brought forward and thrashed out in the Review Committee meetings. It is true that each may hold separate views at the end of the consultation, but the important thing to stress is that all relevant facts are considered before a paper which is acceptable to both parties is adopted.

Objectives

The Workshop Modernisation Review Committee has operated on the basis of an agreed format set out at the beginning of its considerations. The first five topics are:

(a) Assessment of the fleet size.

(b) A determination of the maintenance required.

(c) A decision as to how maintenance will be undertaken.

(d) The location and size of maintenance facilities.

(e) Staffing of the various workshops.

These are followed by more detailed aspects, such as cost, and timing of the construction and commissioning. The Committee has set out to cover all important fleet areas of the Commission such as wagons, locomotives, electric suburban and interurban rail cars, buses, ferries, motor vehicles and so on.

In the last few months, the Workshop Modernisation Review Committee has, by agreement of all members, been widened to encompass all important aspects of fleet maintenance. It is now operating on the basis that workshops are not considered in isolation, and that the main concern is to obtain satisfactory standards of fleet maintenance regardless of how this is achieved. The division of activity between workshops and other facilities, such as depots or garages, provided for this purpose is clearly a matter of some concern.

With the widening of the work of the Review Committee, it is now described as the Equipment Maintenance and Workshop Review Committee. What is expected of the Committee's consideration is:

(a) A projection of fleet size and composition to 1985 and 1990.

(b) A programme of maintenance for all areas of the fleet which will ensure that equipment in service is kept in a safe and satisfactory operating condition at least up to the standards of other major railway, bus and ferry service operations involving similar tasks in other parts of the world.

(c) A plan for the redevelopment of existing PTC maintenance workshops and the establishment of new workshops (in conjunction with appropriate development of depots, garages, etc), to provide for the efficient maintenance of the fleet.

Detail of the wagon traverser (note that it runs on only two rails).

(d) Determination of locations, sizes, general layouts, staffing levels and general priority for the workshops for each fleet area.

The basis of determining workshop facilities to be provided is that the Commission will in general undertake the maintenance of its fleet with its own staff and facilities. It will do this in all areas where it is economical to do so, having regard to capital investment and operating cost, and also situations where industry is not prepared to provide the standard of service required, or where, to rely entirely on private industry, could result in a monopolistic situation and ultimately much higher costs to the Commission. However, the PTC will clearly continue to depend on outside industry for specialised work requiring skills which the Commission does not have available to it, or where it would be clearly uneconomical for the Commission to install expensive equipment for only limited or occasional use.

Preventative Maintenance

To achieve the required standard of the fleet in service, a 'preventative maintenance' programme is needed, involving workshops, garages, depots and other facilities peculiar to particular parts of the fleet. The PTC does not propose to continue with a 'fix when fail' approach whenever this can be economically avoided. It can be predicted that there will be some change in emphasis in the maintenance programme with depots and garages undertaking more assembly exchange, and with workshops concentrating more on assembly overhaul, major accident damage repair, and regularly programmed updating or cleaning up of equipment.

It is to be expected that equipment will be programmed into workshops at regular intervals (six years or so) for general body clean-up and other work which needs to be undertaken on a preventative basis. Equipment will also be programmed into workshops for other preventative maintenance which requires facilities for trades which it will be uneconomical or impracticable to provide in depots or garages.

It is the PTC's objective to standardise on equipment to a much greater extent than in the past and to concentrate on equipment which has relatively low maintenance requirements and which is maintainable with minimum 'out of service' time and capable of ready unit assembly exchange.

Equipment will be programmed into depots, garages and workshops at regular intervals and, apart from accident cases, before it becomes a major maintenance problem. Much of the PTC present fleet has been allowed to deteriorate over many years to an entirely unsatisfactory state leading, in some cases, to unduly heavy and expensive work being undertaken in depots and workshops when the equipment ultimately fails in service. (One example of this is ore wagons.)

It is also to be recognised that as the PTC introduces new equipment into service much of it will be more complex than the equipment it replaces. This applies particularly to ancillary assemblies which will require a more frequent depot or garage attention to keep them in satisfactory service.

Decentralisation

In locating workshop, depot and garage facilities for the fleet, clearly very careful consideration will be given to existing locations where the services exist. But the PTC will also be aiming *not* to unduly centralise its activities, but to recognise the NSW Government's decentralisation policies and to locate workshops and depots etc. at places where they best fit the fleet's needs. Another criterion is that the Commission does not intend to make workshops larger than is necessary for efficient performance of their particular task. One example of this decentralisation is the decision to provide new workshops for wagons in Bathurst, Goulburn, Newcastle, and Clyde in Sydney.

The capital needed to modernise workshops and depots etc. is very great indeed. While it may well be agreed that this should have been done a long time ago, when costs were much less, the fact is that this was not done, and the PTC has to be very thoughtful as to how much capital investment is warranted in facilities for various parts of the fleet.

For example, it now appears that rail wagon maintenance facilities alone for 13,000 wagons (compared with 17,500 in the Atkins-Meinhardt report) are likely to cost about $50-$60 million, and to warrant such expenditure high efficiency of operation of the

Temporary bogie repair line, Wagon Maintenance Centre, Clyde.

workshops is essential if the PTC is not to further seriously prejudice the already very high cost of a number of rail operations.

Unless the overall cost of the capital and the operating maintenance can be contained to a reasonable level, there is a real danger that the cost of providing a number of rail services could reach the point where the community can no longer afford the services when compared with the alternatives available to it.

This makes the question of the manning levels of the workshops and depots a matter of critical importance to the workshop modernisation programme, as it, of course, represents the major expense in keeping the fleet going. The PTC aims to provide highly efficient workshops and depots capable of maintaining the fleet in a satisfactory condition without doubt, but at the lowest possible cost in both capital and operating expenditure. The staffing will be planned on the basis of a proper manning level for each operation, given that expensive facilities and equipment are kept in reasonably continuous use throughout the normal working shift.

The gains in productivity which are essential to be able to maintain the fleet satisfactorily and economically will arise mainly from new facilities and new equipment arranged in a manner that will permit of its efficient use. The PTC cannot reasonably contemplate the situation in which vast investment is made in workshops, depots etc. and yet it does not achieve a satisfactory level of fleet maintenance and an acceptable level of productivity from the new shops.

Clyde Wagon Maintenance Centre

The first positive step which has been taken in respect of the modernised workshops is at Clyde where, although only a temporary arrangement (pending completion of the buildings and installation of all new equipment), a bogie overhaul line has been set up. This has been done in close consultation with the men in the shop; and a joint commissioning council has been established to ensure that there is a complete understanding between the management and the shop floor, and to enable a number of local decisions to be taken in this council, rather than at some more remote point in the Commission.

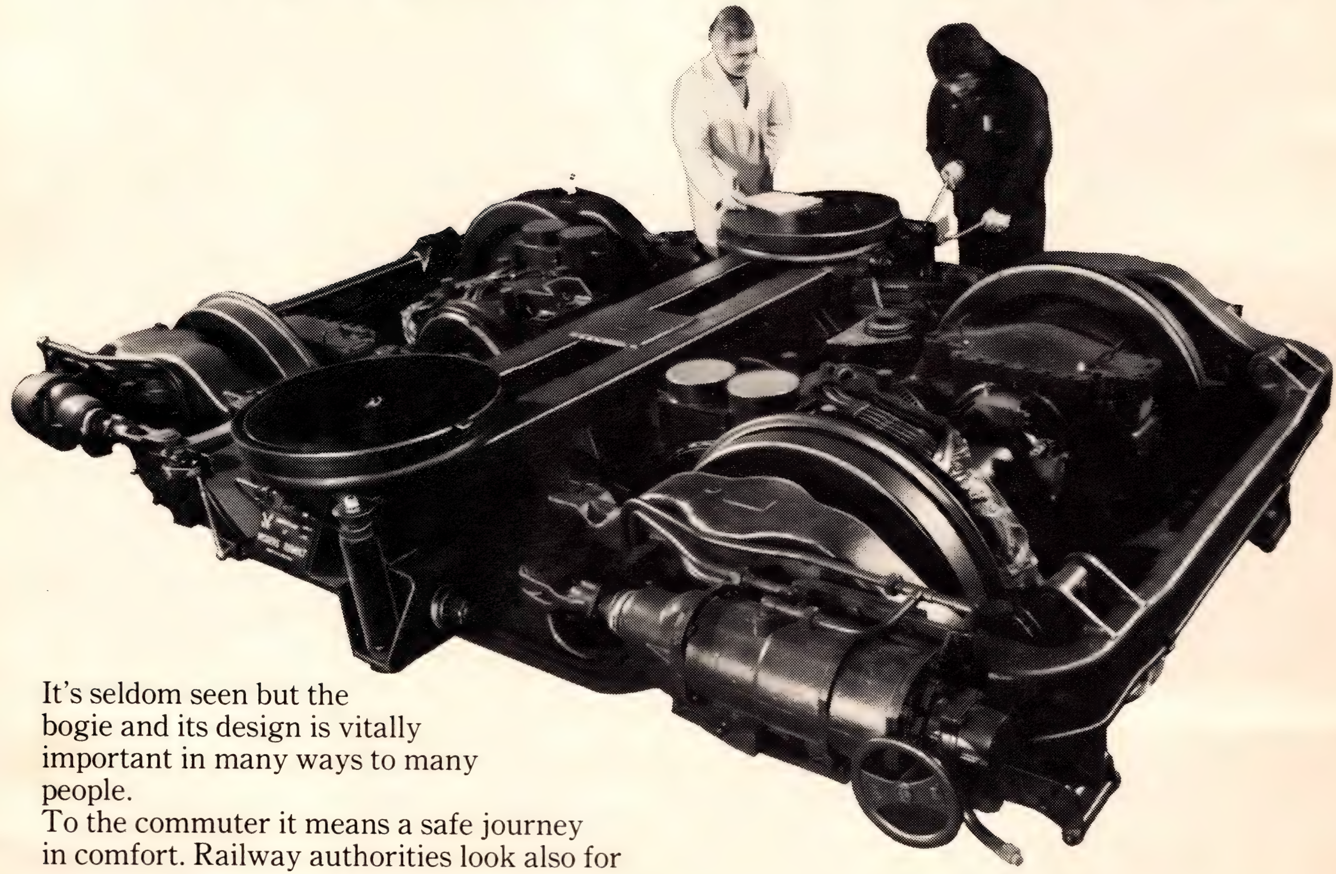
Improved productivity has been obtained from this operation and much more will be achieved as the process settles down with further improvements to facilities and equipment. It is hoped that this will prove to be a model on which other workshop changes can be based and which will enable the value of the massive investment in workshops and equipment to be justified and to continue.

The Equipment Maintenance and Workshop Review Committee has so far concentrated on assessing fleet sizes and on developing proposals for rail wagon maintenance, bus maintenance, and plant and equipment maintenance. These will continue to completion as quickly as possible, as the PTC progressively introduces other items, the first of which will be the maintenance requirements for metropolitan electric rail cars.

The overall programme is a very large one, and on present indications it will take well into 1979 to reach finality on all aspects. However, the programme will be progressive and the Commission will be constructing wagon main-

(continued on p. 24)

The unseen hero.



It's seldom seen but the bogie and its design is vitally important in many ways to many people.
To the commuter it means a safe journey in comfort. Railway authorities look also for reliability, long life and low maintenance.

Early in 1979, the first of 150 double deck electric passenger cars enter service in Sydney, running on bogies that meet all these requirements. Vickers Ruwolt is manufacturing its own design of cast-steel, air suspension, trailer and motor bogies for A. Goninan & Co. Ltd., main contractors to the N.S.W. Public Transport Commission. Rely on the experts.

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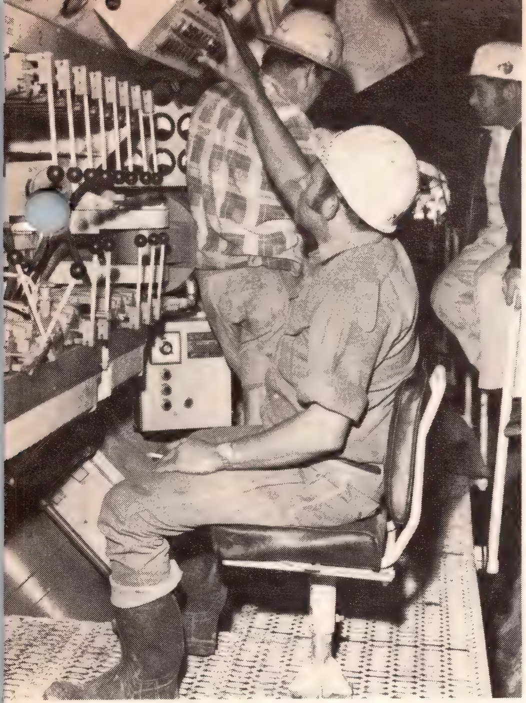


New Zealand's Kaimai Tunnel

The opening of the Kaimai Tunnel and deviation on 12 September last marked a new era in New Zealand Railways operations. The tunnel provides a direct link between the Bay of Plenty and the Waikato, two of the fastest growing areas in New Zealand.

The elimination of the long, tortuous haul around the northern end of the rugged Kaimai Ranges reduces the distance between the Bay of Plenty and the main north-south railway by up to 100 km, and also makes possible the use of more powerful locomotives and an increase in train hauls from 800 to 1200 tonnes.

The areas served by the tunnel include some of New Zealand's richest farm land, the heart of the nation's forestry industry, and the boom city of Hamilton.

The Waikato — Bay of Plenty railway network is already the second busiest in New Zealand, exceeded only by the North Island's main trunk line. With the reductions in freight rates and in transit times, made possible by the tunnel, the lines are expected to become

Controlling the tunnelling machine (top left).

The face of the tunnelling machine, after the break through (top right).

Rock from the Kaimai tunnel (centre); the steam indicates the temperatures.

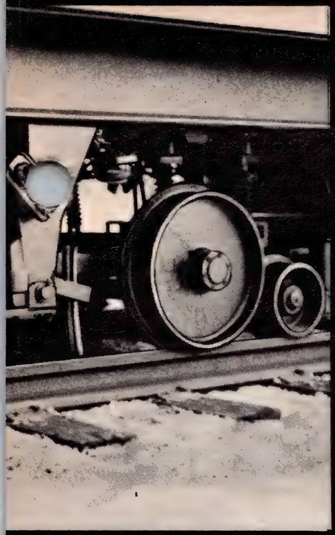
Water near the eastern entrance (bottom).

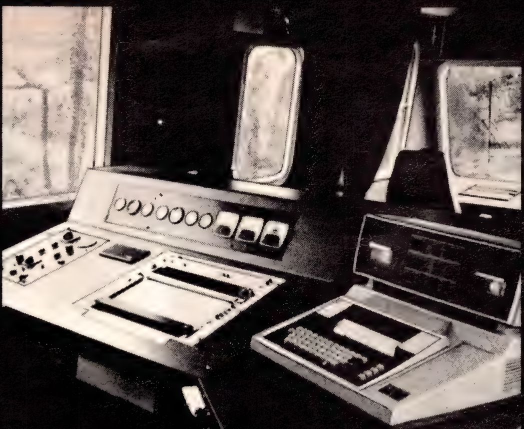
EM 80

TRACK EVALUA

High speed track evaluation under actual rolling stock axle loads.

Already chosen in Australia by:
Public Transport Commission of N.S.W.
Mount Newman Mining
Hamersley Iron.

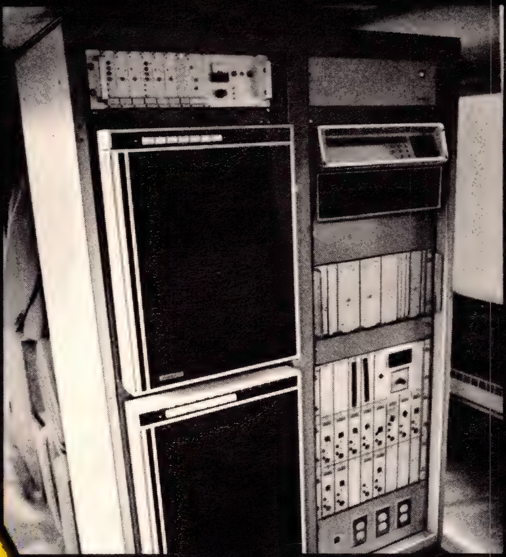




Coil spring suspension, hydraulic shock absorbers and fail-safe shoe brake system for comfortable and high speed travel.
Axle loads of up to 18 tonnes and recording speeds of up to 110 km/hr. available.
Telescopic measuring axles with large diameter wheels allow full speed recording of all parameters through switches and crossings.
Electronic strain gauge measuring system is completely unaffected by environmental or temperature conditions. The EM 80 is currently operating in conditions varying from hot desert to cold mountainous country, with temperatures ranging from +50°C to -23°C.

Central console for control of recording and analysing functions. Measurement results for: alignment (l.h. and r.h. rails), longitudinal level (l.h. and r.h. rails), gauge, twist, superelevation, and recording speed are traced on one (or optionally two) 10 channel analogue recorders. Real-time exception reports for all parameters are tabulated by 30 characters per second silent teleprinter. A summary listing the total length of track exceeding the allowable tolerances for each parameter is also produced at the end of each kilometer.

TION CAR



Freely programmable analysing system uses well-known D.E.C. PDP-8A mini computer. The complete analysing process is software controlled and can be altered at any time to suit changing circumstances. With this system, it is possible for the operator to make small programme changes by keying in simple commands via the teletype.
All recorded data is stored on tape in digital form for further analysis. Phase encoded 9-track 1,600 bits per inch format is "IBM compatible", and compatible with most major computer playback facilities.

High quality seating for operator and observer, fingertip driving controls and excellent visibility provide optimum comfort and safety for crew.
Standard features include: Intercommunication system between front and rear operators' positions and central recording console; separate totally enclosed engine compartment; fully air-conditioned (reverse cycle) car interior; tinted safety glass and blinds for all windows, fully carpeted internal lining, toilet and kitchen facilities.

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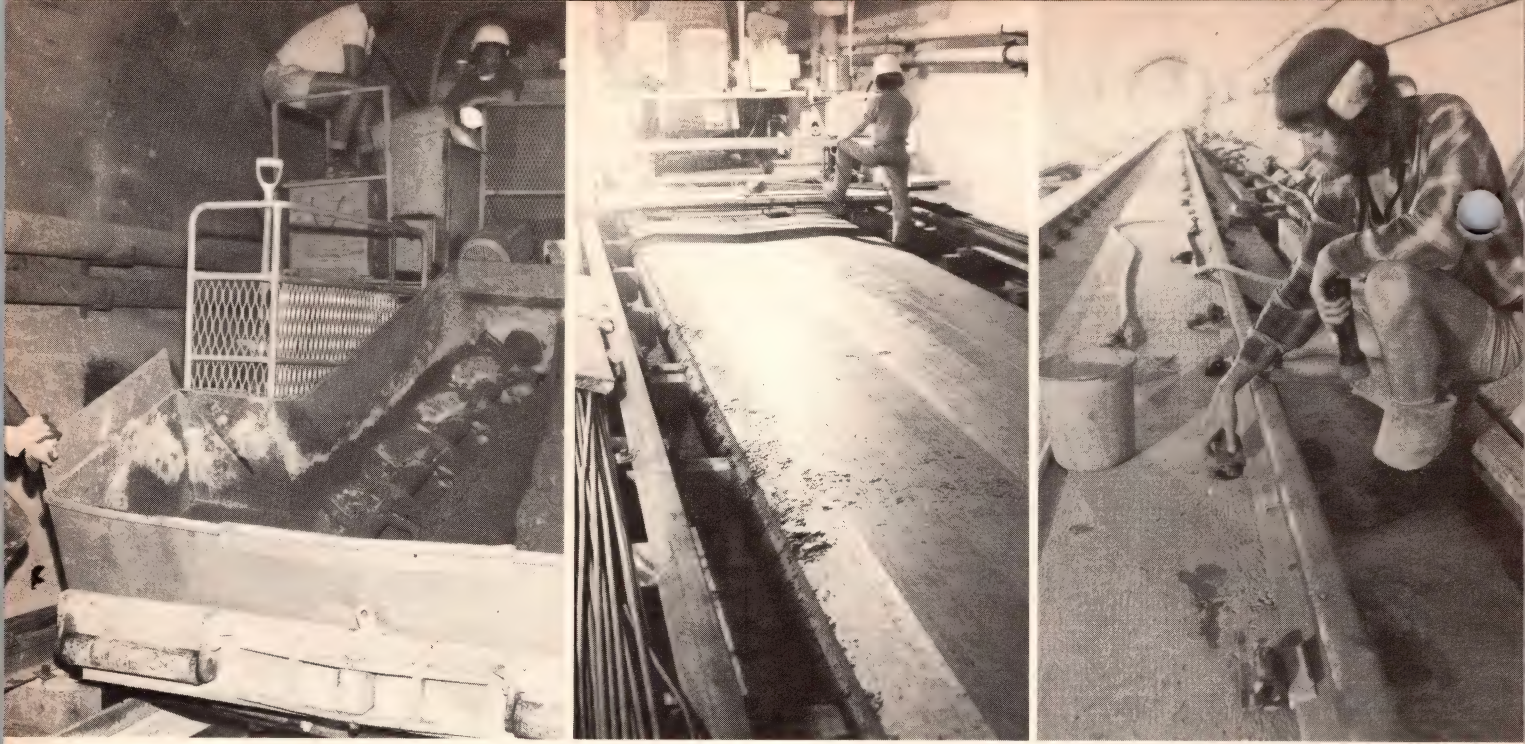


The floor-pouring machine — front (left) and rear (centre); preparing to secure the tracks (right).

substantially busier as the whole central area of the North Island reaps the benefit of the vital, new link.

* * *

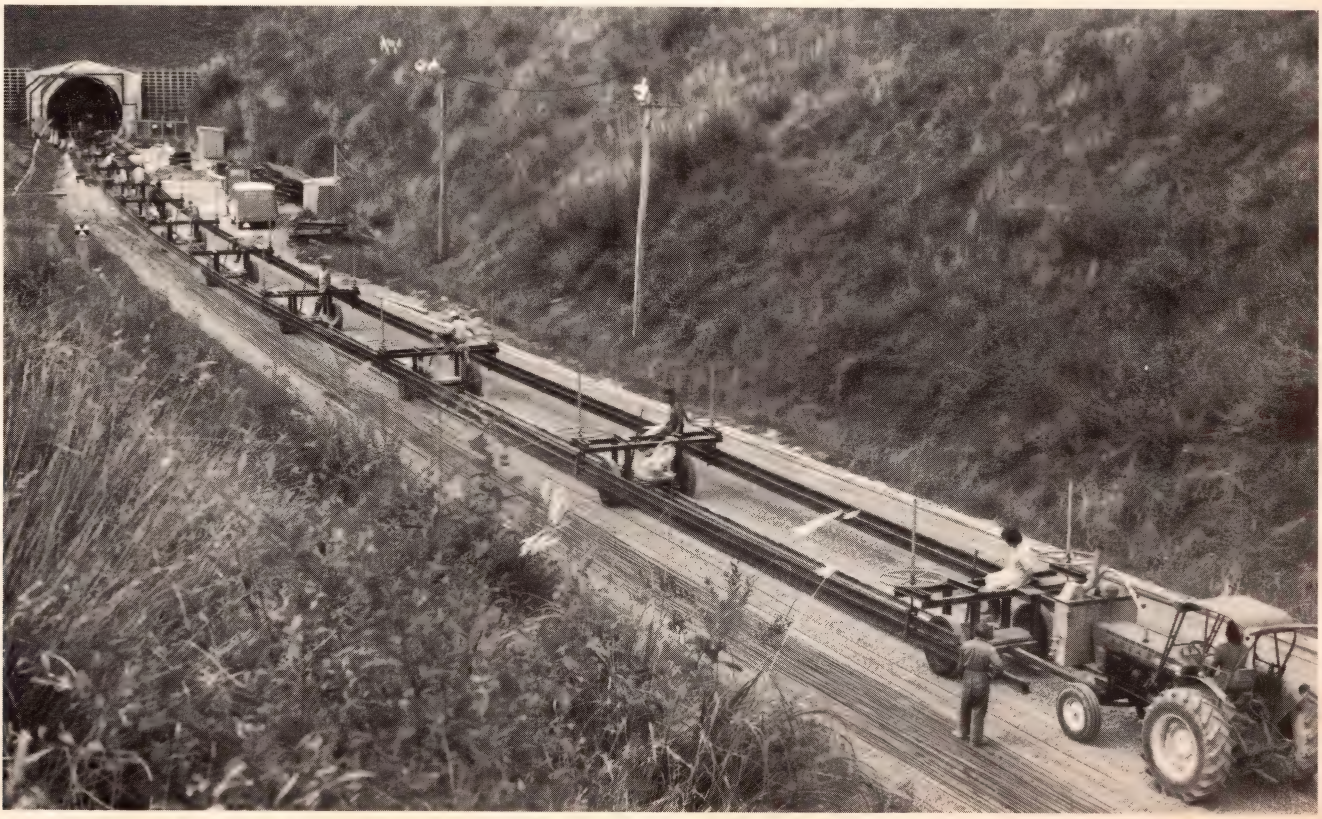
Suggestions for a direct rail link across the Kaimai Range date back almost 70 years. The first proposals were shelved with the outbreak of World War I; later surveys were nullified by the depression of the 1930s. With the rapid economic growth after World War II, widespread support developed for improved rail access across the ranges to the port of Tauranga; farming groups, who had always advocated a direct rail link, were now supported by a fast-growing forestry industry.

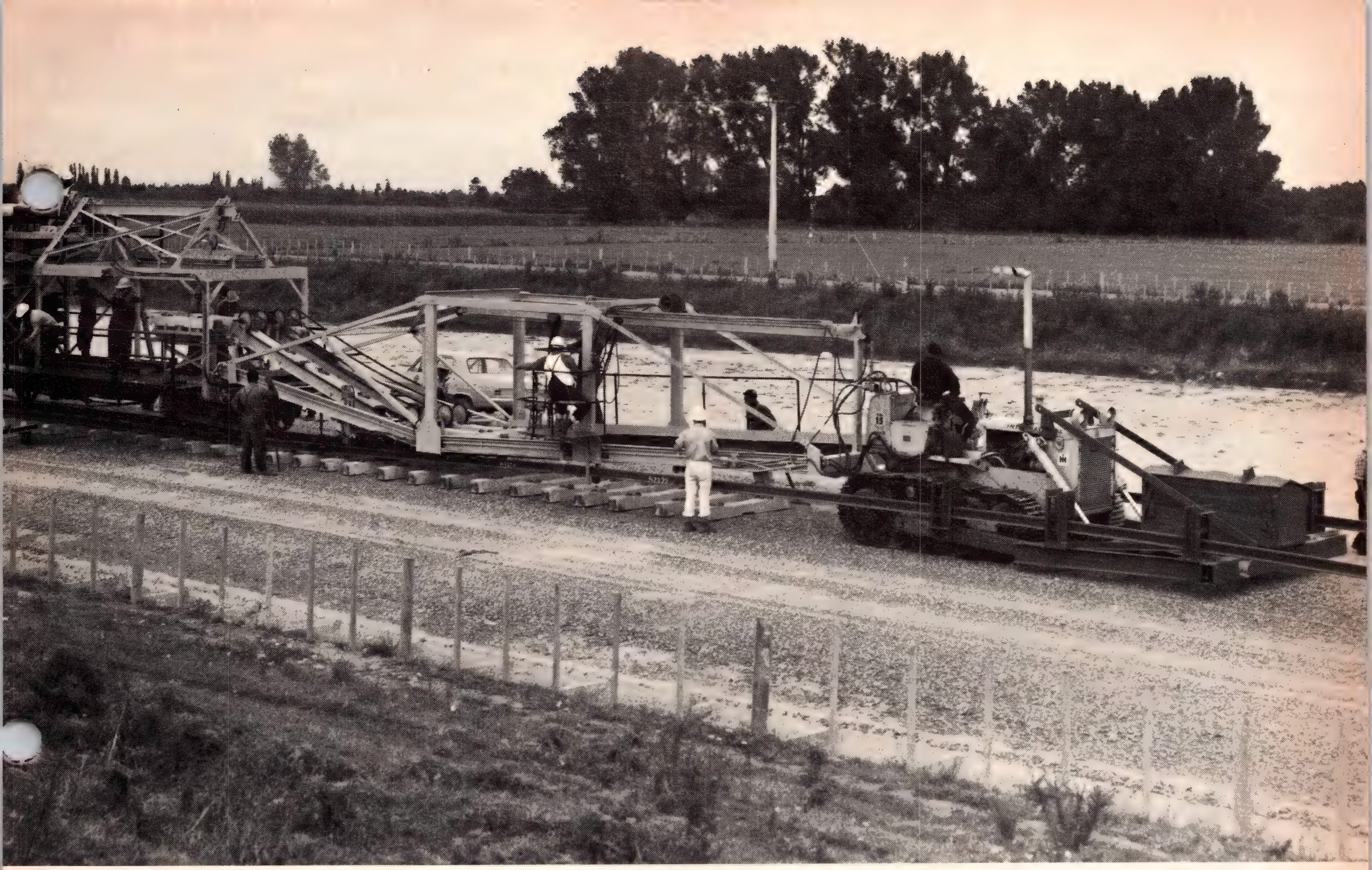
A Government report cautiously concluded in 1958 that "expensive railway development works could only be justified by a substantial increase in the demand for railway services." It agreed, however, that the proposal should be reviewed "if expansion of trade in the Bay of Plenty warranted this in the near future."

Local belief was that development already warranted such a review. Its persistence could not be ignored, and in 1960 the Ministry of Works and the New Zealand Railways were asked to report on the costs of constructing and operating a tunnel.

A Commission of Inquiry into improved access by land to the port of Tauranga and the Bay of Plenty, set up in August 1962, also recommended a tunnel, and a Ministry of Works assessment concluded that the project was economically justified.

Track being taken into the tunnel, in 500 ft lengths.





Laying track, on concrete sleepers, near the western portal.

But even as Government departments went ahead with preliminary preparations, such as exploratory drilling and aerial and geological surveys, Chambers of Commerce of the Thames Valley, further north, opposed the proposal on the grounds of excessive cost, and the Auckland Harbour Board argued that the money could be better spent on improving local ports.

When the Cabinet finally approved the project, in September 1963, threat of further delay arose when popular agitation began for a combined road-rail tunnel. Fortunately, the proposal was rejected quickly, in view of the vast extra expense and the formidable engineering problems that would have been involved.

Exploratory expenditure of $710,000 was approved in 1965, and a critical path analysis projected a tunnel finish date of October 1970. Tenders were called in 1966; they were accepted for the western approaches in April 1968, the Ministry of Works being given the contract.

* * *

Underground work began in January 1969 with the driving of a small exploratory tunnel at the western portal. The face was enlarged later in the year, but progress was difficult. The initial tunnelling was through alluvial material, loose stones and earth washed down the face of the ranges over the centuries; and because of the weak nature of the ground, the strong steel supporting frames slowly settled into the tunnel floor. It was not until February 1971 that the tunnel was through the alluvial and reached the lava rock.

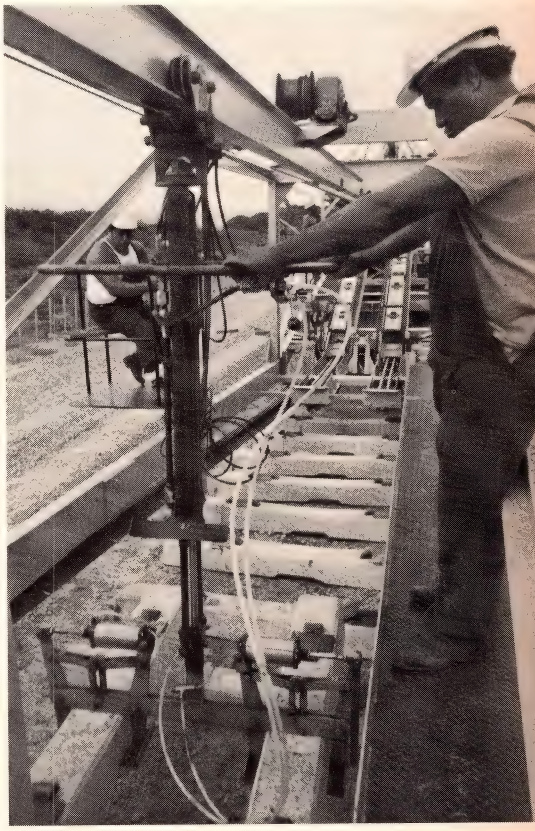
A specially imported rock-cutting machine was then brought into action but only to encounter unexpected difficulties. The cutters could cope with the rock, but the latter broke off in very large blocks, which jammed and damaged both the cutters and the back-up equipment. Progress was far too slow, and the machine was transferred for operations in the eastern approaches.

The western heading was then continued by the traditional method of drilling and blasting.

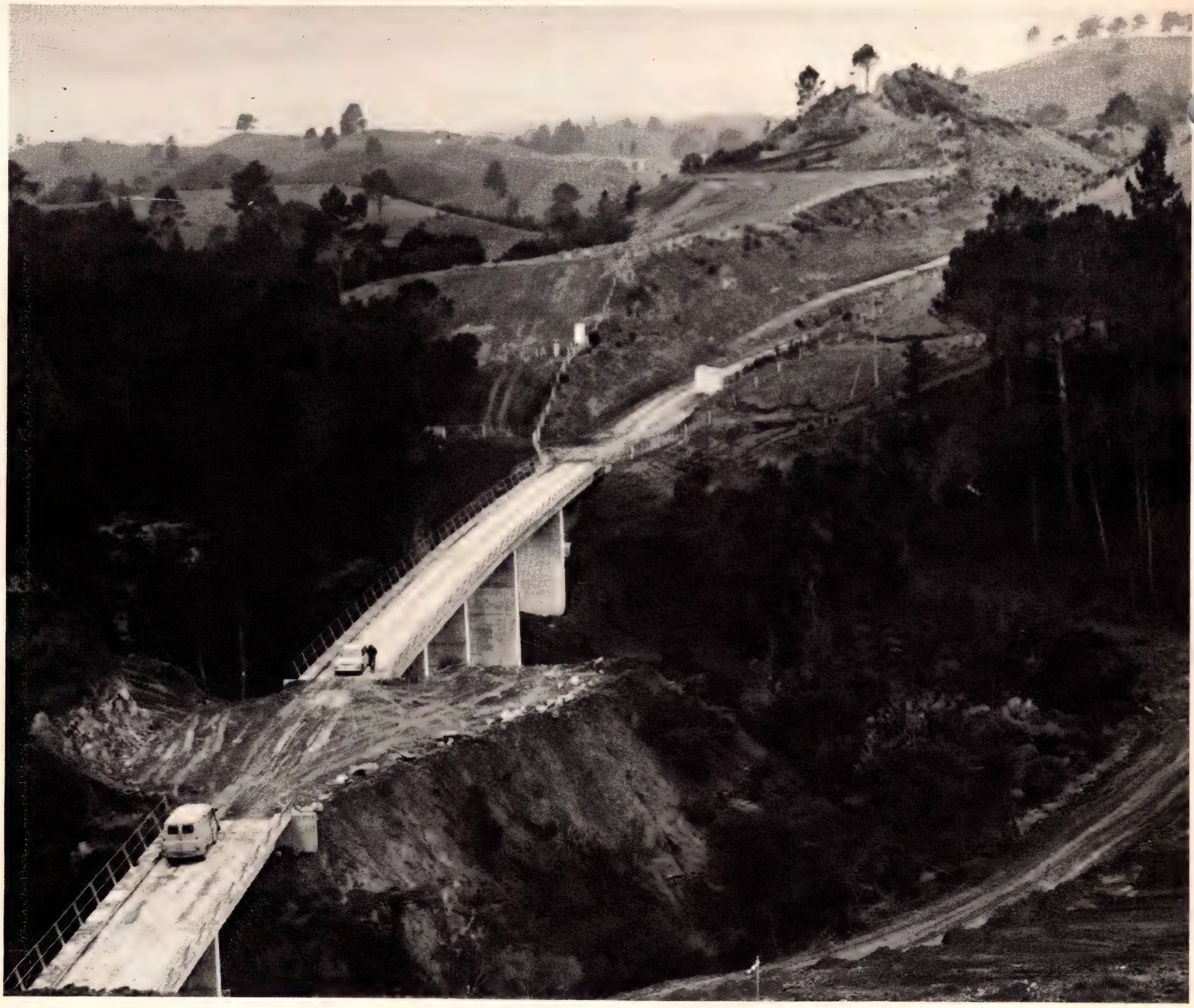
* * *

The geological conditions of the western and eastern ends of the tunnel had been explored by drilling, but the geology of the central parts of the Kaimai Range had perforce to be inferred from the surface geology.

Some 3.9 kilometres into the tunnel, an old debris slope was unexpectedly encountered — an ancient, buried land surface, complete with tree fragments charred by hot lava. Supporting sets failed repeatedly, and water flowed in at the rate of 300 cu.m. per hour.



Extensive use of concrete and steel was essential, and it took a full year to carry the tunnel through this incredibly difficult 50 m stretch.



View from the eastern portal, with two bridges completed.

On the eastern side, the rock-cutting machine went into action in April 1972, and made good progress. But, with a downward slope of 1 in 300 towards the face, water seepage was always a problem, and continual pumping was essential.

Tunnellers on both faces encountered major problems with the high rock temperatures. The maximum expected temperature was 23°C, but the heat peaked at 38°C in the central areas, near the break-through. Large refrigeration units were installed to cool the work areas on both headings.

The break-through came on 21 June 1976, at a point 4.07 km from the western portal and 4.78 km from the eastern. The two tunnel faces had been kept in line by laser beams.

* * *

The 8.85 km tunnel is only part of a new deviation of 25 km which includes 13 bridges and underpasses, and six culverts.

The largest bridge on the western side is 183 m long, over the Waikou River, from which the track runs on a 12 m high embankment over the flood plain. The gradient up to the portal is then 1 in 300.

The deviation line beyond the eastern portal is only 5 km long, but it crosses very broken ground, and entailed heavy construction projects; these included two bridges over the Whatakao, deep cuttings, and a 228 m viaduct across the Wainui River.

Crossing loops at either end help with the deployment of trains, which traverse the tunnel on welded rail laid on a concrete bed.

(continued from p. 5)

Each site installation will comprise a weather resistant building housing communications equipment, a 70 m tower for the microwave link, and aerials for the VHF two-way radio system. Construction of the first seven microwave towers has been completed. Each repeater station will have its own solar power unit with an output of 1400 watts. Total power available to the system will be more than 34 kilowatts.

The system will provide VHF radio communication with a moving train at any point on the line. Train crews and track maintenance gangs will have continuous radio communication with train control and with each other.

Mr Dyason said the microwave communication system was new to ANR. The integrated microwave-VHF radio system would replace the previous railway practice of providing "open wire" telephone lines for railway working.

Total cost of the cummunication system for the new railway will be approximately $5 million.

Construction of the standard-gauge Tarcoola-Alice Springs line began in 1975 and is now approaching the half-way mark. The line is expected to be opened for traffic in late 1980.

House of Representatives

Select Committee on Tourism

Chairman's Statement when Tabling the Final Report, 26 October 1978

1. The Committee was first appointed in December 1976 and since then has become acutely aware of the potential and problems of the Australian tourist industry. Since it was first appointed, the Committee has met on 61 occasions, including 24 meetings during this Parliament; 36 public hearings have been held at which 204 witnesses, representing 94 organisations, appeared before the Committee. The Committee also conducted 32 inspections, and on a further 31 occasions held informal discussions with representatives of the tourist industry.

2. The Committee was required under its terms of reference to identify the short- and long-term issues facing the tourist industry, as well as to examine the roles and responsibilities of the various levels of Government and the industry in the promotion and development of tourism. The Committee was also required to consider the economic significance of tourism, the influence of the various modes of transport, and the adequacy and availability of statistics.

3. This report is not an enthusiastic and unequivocal endorsement of the local tourist industry. Rather, I would consider it a recognition of tourism as an industry. In this respect the Committee has concluded that the maintenance of stable economic conditions is of paramount importance not only to the tourist industry but to all industries.

4. The Committee has concluded that the tourist industry is of considerable economic significance and deserves greater recognition. The Committee was not able to make a definite statement on the economic significance and has recommended that this be a matter for further study. The advisers to the previous committee, Dr Pigram and Dr Cooper, prepared a paper for the Committee on the economic significance of tourism in Australia. The advisers estimated that the direct turnover from tourism in 1974-75 was $3,300 million while direct employment was 263,000. The estimates by the advisers have been subject to criticism but they give some indication of the scale of the industry. The Committee considers that the paper prepared by the advisers is a valuable first step in the attempt to establish the economic significance of tourism in the Australian economy.

5. One of the achievements of the Committee has been to create greater awareness of tourism in the community. The Committee has concluded that in the past tourism has not been given proper recognition and has recommended that the Department of Industry and Commerce be re-named "The Department of Industry, Commerce and Tourism". While this recommendation has a certain cosmetic appeal, it does at the same time give tangible recognition of the industry.

6. The Committee considered whether tourism has special features in comparison with other industries. A special characteristic of tourism is that it does provide employment opportunities for unskilled and part-time workers. It is also an industry which can have a significant effect on the balance of payments. While tourism is unlikely to have a dramatic effect on community health and welfare, it is in a unique position to foster and develop the community's knowledge of Australia and the Australian heritage.

7. Tourism can contribute to regional development and decentralisation. It has been, and will continue to be, a major stimulus to sustained growth in many non-metropolitan areas of Australia. It has an advantage over many other industries in that, while it is labour intensive, it has distinct growth prospects.

8. The Committee has considered the potential of tourism and has concluded that its ability to achieve its potential will depend on the development of Australia's tourist attractions, on the aggressive promotion of these attractions by both industry and government at home and overseas, and on the introduction of more innovative air fares and the approval of more air charter flights from selected overseas destinations.

9. Road transport will have a significant influence on development of tourism. The motor car will continue to dominate domestic transport, accounting for over 80% of all trips, while aviation will probably increase its share of the market.

10. The dominance of the private car will require a massive up-grading of the Australian road network. The Committee has recommended the compilation of a priority list of tourist roads and that additional funds should be made available by Commonwealth, State and Territory governments to up-grade those roads. Roads of particular concern to the Committee are the Stuart Highway, the Bruce Highway and the Alpine Way.

11. The Committee was also concerned with the need to ensure that the transport and tourism policy arms of government, co-operate in the development of policies for air transport and has recommended the establishment of a Standing Interdepartmental Committee on air transport. When the Department of Transport first appeared before the Committee in March 1977, it suggested that $850 would be the best available return air fare between Australia and Europe. At a later hearing, the Department advised it no longer holds this point of view. I consider that one of the achievement of this Committee is that since the Committee commenced its inquiry, there have been reviews of both international and domestic aviation policies.

12. One of the witnesses who appeared before the Committee was Mr Laker (now Sir Freddie). At the time he appeared before the Committee, in May 1977, he had not yet launched his trans-Atlantic "Sky Train". The Committee was impressed by Mr Laker's concept of low fares aimed at the budget-conscious traveller, and can see no reason why the recommendation of the previous Committee for a trial series of charter flights along the lines proposed by Mr Laker has not been implemented. The previous Committee stated, and I quote, "This Committee considers that as a first principle promotion of travel to and from Australia can only benefit from the availability of cheaper air fares and that none of the views put to the Committee on the disadvantages of charter flights of the type proposed by Laker, have been substantiated by experience."

13. This report was finalised prior to the release by the Minister for Transport of the International Aviation Policy Review. However, the Committee would hope that the follow-up to the review would be a matter for the proposed Standing Committee on Air Transport. I am particularly pleased to note that the review of International Civil Aviation Policy concluded that bodies concerned with both tourism and transport should closely monitor the results of any change in the international fare regime.

14. The Committee has considered the introduction of the departure tax announced in the recent Budget. Indeed, the Committee would claim credit for raising such an issue. I suspect that it was the publicity given to one of the Committee's hearings which may have provided the idea for the tax. The Committee would, however, suggest that the funds raised by such a tax should be used for the promotion and development of Australian tourism. If this is so, then the carriers should have the responsibility for the collection of the tax.

15. The Committee is also concerned about the development of Australia's national tourist attractions, particularly those where there is a Commonwealth responsibility. Two attractions are of particular concern to the Committee. The first is Ayers Rock, where the Committee considers that the lack of clearly defined administrative arrangements has hampered the development of this national attraction. The Committee is concerned at the delay in commencing the proposed tourist village and the delay in the preparation of the plan of management. The situation which has arisen in respect of Ayers Rock is not one which can be overcome by a massive injection of Government funds. Rather, there is a requirement for some heads to be knocked together.

16. The Committee was also concerned about the Great Barrier Reef. The Committee has recommended that the staff ceiling for the Great Barrier Reef Marine Park Authority be lifted to a level where zoning procedures can be completed within 25 years. The Committee was told that with the present staff, it may take up to 100 years. It also recommends that funds be made available to allow the Authority to provide interpretative facilities for tourists at the major destination areas adjacent to the reef.

17. The Committee has considered the role of the Australian Tourist Commission and envisages an expanding role for that organisation. The Committee suggests that there is a need for an increase in promotional activity by that organisation; however, it does not suggest a substantial increase in staff. The Committee has also suggested that the A.T.C. should involve itself in domestic promotion, without, of course, detracting from its overseas promotion which should remain its primary activity. The A.T.C. should undertake umbrella campaigns in consultation with the State and Territory governments aimed at persuading Australians to holiday in Australia.

18. The Committee suggests that the major role for the States is in domestic promotion and that there should be greater emphasis on the establishment of regional organisations. The method of assisting the regional organisations varies from State to State and the Committee would suggest that the States discuss these differences in the hope that they can learn from each other's experiences.

19. The Committee has acknowledged the role of local government as being crucial to the development of Australian tourism. The Committee does not, however, consider that an accommodation tax is an equitable method of spreading the costs of tourism across the community.

20. The Committee has identified 26 issues facing the industry. Certain issues have been resolved while others require action by various levels of Government. The Committee has recommended the introduction of a depreciation allowance for income-producing buildings, as well as recommending changes to the investment allowance. The Committee has been particularly concerned with the requirement for an international traveller to re-trace his steps on tours within Australia, as well as with the possibility of Australians being able to combine an international holiday with a domestic holiday. The Committee has recommended the designation of Townsville as an international airport and that there be a study conducted of the desirability of the designation of a Tasmanian airport as an international airport. The Committee also recommends that the Minister for Transport announce, as soon as possible, a specific time-table for the up-grading of Brisbane airport.

21. A particular issue which has been raised at nearly every hearing of the Committee is that of penalty rates. The Committee has concluded that the penalty-rate structure prejudices employment opportunities, as well as providing a positive competitive disadvantage to the Australian tourist industry. The Committee recognises that wages and conditions are determined within the framework of an established industrial system which includes the Arbitration Commission. The Committee has recommended that the Government establish a tripartite working group to inquire into and report on the normal hours of work, penalty rates and related working conditions. The Committee, however, was at a loss to understand why employers have not sought a re-structuring of the penalty-rate provisions in current negotiations before the Conciliation and Arbitration Commission.

22. The Committee has suggested that the industry needs to carefully consider its own role in the development of tourism. It has concluded that the majority of operators in the industry are not aware of the need for a well-financed industry organisation to promote the industry to government, to other industries and to the public at large. It has also been suggested that the industry needs to recognise the inter-dependence of its various sectors.

23. It has not been possible in this tabling statement to comment on all of the conclusions and recommendations of the Committee; however, these are set out in the Report. In concluding, I would claim that a major achievement of the Committee has been that attention has been focused on the tourist industry. However, it is up to the industry itself to recognise that in the main, its future depends upon its own efforts.

24. I would like to express my thanks to the Chairman of the Committee in the previous Parliament, Mr Duke Bonnett, whose assistance and guidance in the early stages were invaluable. I would also pay sincere tribute to the members of my Committee, in particular to the Deputy Chairman, the Honourable Member for Grayndler, Mr Frank Stewart, whose detailed knowledge of the tourist industry has been of great benefit to the Committee.

Railways of Australia Active in Tourism

The Railways of Australia have been quick to recognise that there are many tourists who prefer being on eye-level terms with the scenery when travelling on holidays. And many of these prefer to leave their cars at home and let someone else do the driving! Even more appreciate the added bonuses of the economy of rail travel and the opportunity to 'stretch their legs' while travelling.

A few miles from the mainland . . . but a million miles from care! A view from Daydream Island, looking towards Shute Harbour.

The 'mix' of all these advantages, coupled with the flexibility of comfortable coach/launch travel between railhead and tourist resorts, with their high-class accommodation, are reflected in the success of the package tours arranged by the Railways of Australia.

With an extensive rail network of over 40,000 km and a big fleet of world-class air-conditioned trains, the Railways of Australia are ideally equipped to convey tourists in comfort to the tropics, to the outback, to the cities, to the mountains, and to the big rivers!

Westrail tours visit many famous resorts, the tall-timber territory, the goldfields, the spectacular wildflower country, and the scenic north.

Victorian Railways are currently offering 32 unique holiday packages visiting most parts of Australia, with destinations and durations as varied as the low-cost fares.

Australian National Railways play a major role in the travel business with thousands of tourists travelling on their 'Ghan' service to 'The Alice', and between Sydney and Perth on 'Indian-Pacific' which it part-owns with other systems.

Perhaps Queensland Railway's best-known tour is the 5-day Daylight Rail Car tour which operates between Brisbane and Cairns, with tours and overnight motel accommodation en route.

In addition, QR's famous 'Sunlander' and 'Capricornia' air-conditioned trains provide vital links between Brisbane and northern Queensland railheads for many package tours arranged by the Public Transport Commission of NSW and other systems.

The current PTC tours programme offers 32 DayaWay 1-day tours visiting the many NSW tourist resorts, and 82 StayaWays specially designed to suit every mood and budget.

Typical of the StayaWay package tours arranged is the PTC's Daydream Island holiday. This

(continued overleaf)

Australia's largest and most unusually contoured swimming pool — on Daydream Island. The centrepiece is the island bar.

"Brisbane Limited" provides air-conditioned travel between Sydney and Brisbane. Beyond Brisbane, tourists travel on the "Sunlander" to Proserpine, railhead for Shute Harbour and Daydream Island.

low-cost tour embraces sleeping-berth travel on 'Brisbane Limited' between Sydney and Brisbane and on 'Sunlander' between Brisbane and Proserpine in both directions, overnight motel accommodation at Proserpine, return coach travel to Shute Harbour, and return launch travel to Daydream Island, just 20 minutes off the coast across crystal-blue Whitsunday waters.

All meals on the island and first-class accommodation with private facilities are included in the package. Every Daydream Island unit has its own view of coral waters and surrounding islands, and is the ideal headquarters for island cruising, water sports, or swimming in Australia's largest and most unusually contoured pool.

These 11-day tours depart from Sydney every Tuesday and cost only $404 for adults, $335 for children.

The Public Transport Commission can also help tourists if they prefer something different to the 82 STAYaWAYS which extend from the historic convict settlement of Port Arthur to the desolate beauty of the Red Centre!

Experienced travel consultants in its Travel and Tours Centres at Sydney and Newcastle can 'tailor' package tours to individual requirements anywhere in Australia and New Zealand, embracing first-class accommodation and travel by rail/air/coach/launch.

The undoubted success of package tours arranged by the Railways of Australia reflects credit also on coach operators such as Cobb & Co, Carah, Greyhound and Australian Pacific, and the many first-class hotels/motels/tourist resorts used, all of whom work in close co-operation with the Railways.

Tourism is big business, and the Railways of Australia are playing their part in developing and meeting the needs of the local market.

(continued from p.13)

tenance facilities and probably other facilities during this period, consistent with the conclusions of the Committee.

In undertaking this review of fleet maintenance and workshop facilities the Commission will provide reasonably generous space for all of the operations required for the fleet sizes projected. It will also provide for future expansion at each of the key facilities should the fleet estimates prove to be low; and it will review the fleet size projection and the workshop provision at not more than five-year intervals to ensure that there is a balance between maintenance workshops, depots, garages etc. and fleet requirements.

QR-Planning and Development Section

The Planning and Development Section of Queensland Railways, under the direction of Mr G. L. Boyd and attached to the office of the Commissioner, has been established two years, and in that time has been directly involved in determining priorities for development, in co-ordination of planning, and in making known Queensland Railways' thinking in discussions at national and international level on the future direction of railway operations.

On the national level, the Queensland Railways Planning and Development Section has been closely involved in the establishment of AARDO and its projected work programmes.

The Section has also been involved with research in the fields of L.C.L. traffic, inter- and intra-State terminal requirements in Brisbane, and management aids such as computer programmes.

In the coming year considerable attention will be directed towards the investigation of coal-wagon design and performance, rail wear and performance, freight accounting, mechanised track maintenance and on developing a more efficient method of tracing wagon and container movements.

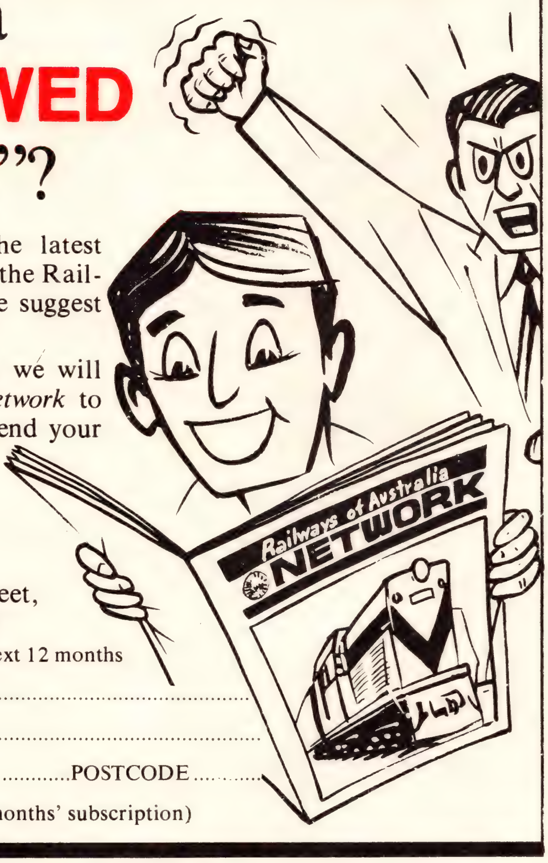
As Mr Boyd puts it, "The Planning and Development Section is an agency for the collection of information for analysis and evaluation. It then has the task of reporting, making recommendations, and in a number of cases initiating the necessary action on matters examined."

The Planning and Development Section has been very much involved in the expansion of the central Queensland coal industry. Exhaustive investigation has been carried out in cost-return ratios involved in the movement of coal from the various mines to the export ports, and also in the probable fiscal situation with regard to expansion of existing mining operations and projected developments of mines throughout the State.

In the traffic area, attention is being given to the application of technology for ensuring maximum track usage, and in establishing guidelines for the purchase and acquisition of rolling stock.

Computers are being used to analyse the necessary information and this in itself has resulted in personnel from the section making inspections and evaluations of the latest uses of computer technology in the overall operation of a railway system.

Although still in its infancy, the Planning and Development Section has collected and collated much valuable information from a wide range of sources, and eventually this information will undoubtedly play a major role in determining future courses of development to be taken by Queensland Railways.



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VR — Supply and delivery of cast steel bogie parts for 1600 mm gauge wheels: Bradford Kendall Foundries Pty Ltd ($787,330).

VR — Supply and delivery of axles: Sumitomo Shoji (Aust) Pty Ltd ($325,830).

VR — Supply and delivery of roller-bearing axle boxes: SKF Australia (Sales) Pty Ltd ($239,510).

VR — Construction of gravity drains, rising mains, pump stations, modification of existing sanitary plumbing and septic tanks, erection of purification plant building and associated works at the Mt Buffalo Chalet: M. Pescatore & Co Pty Ltd ($152,618).

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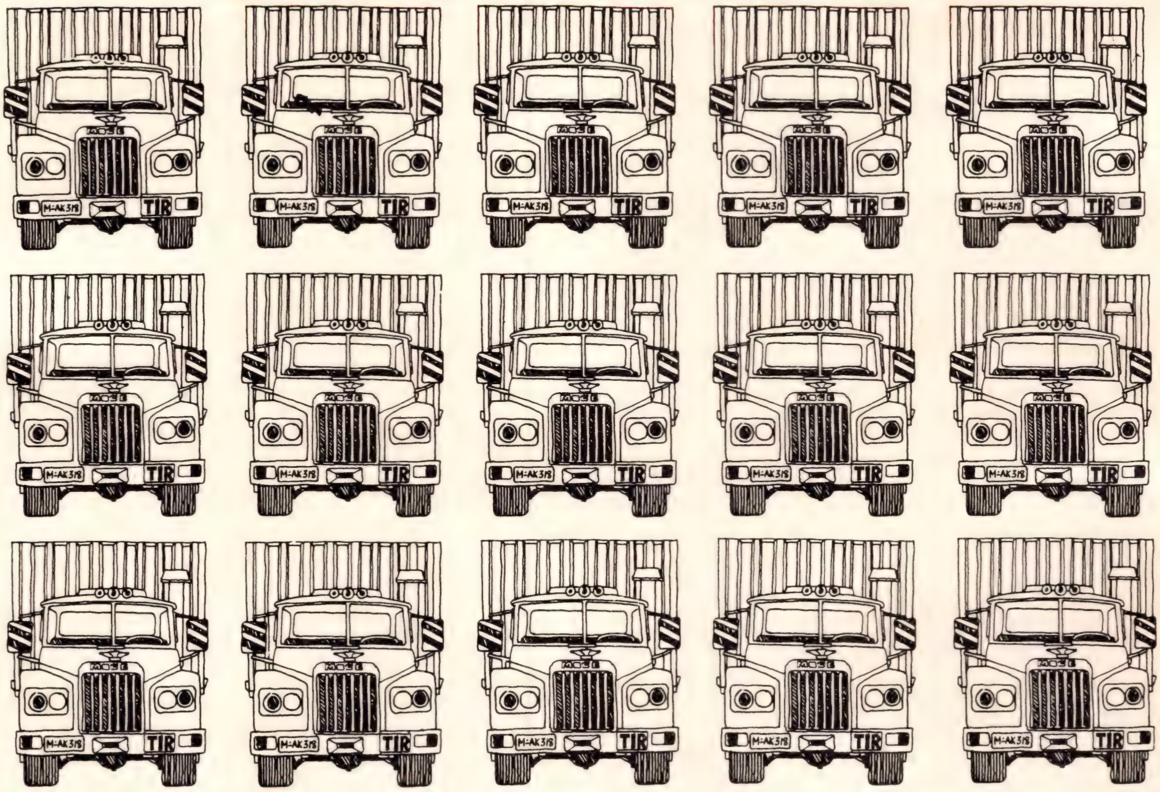

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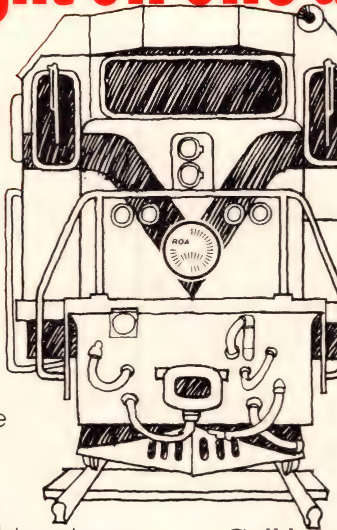

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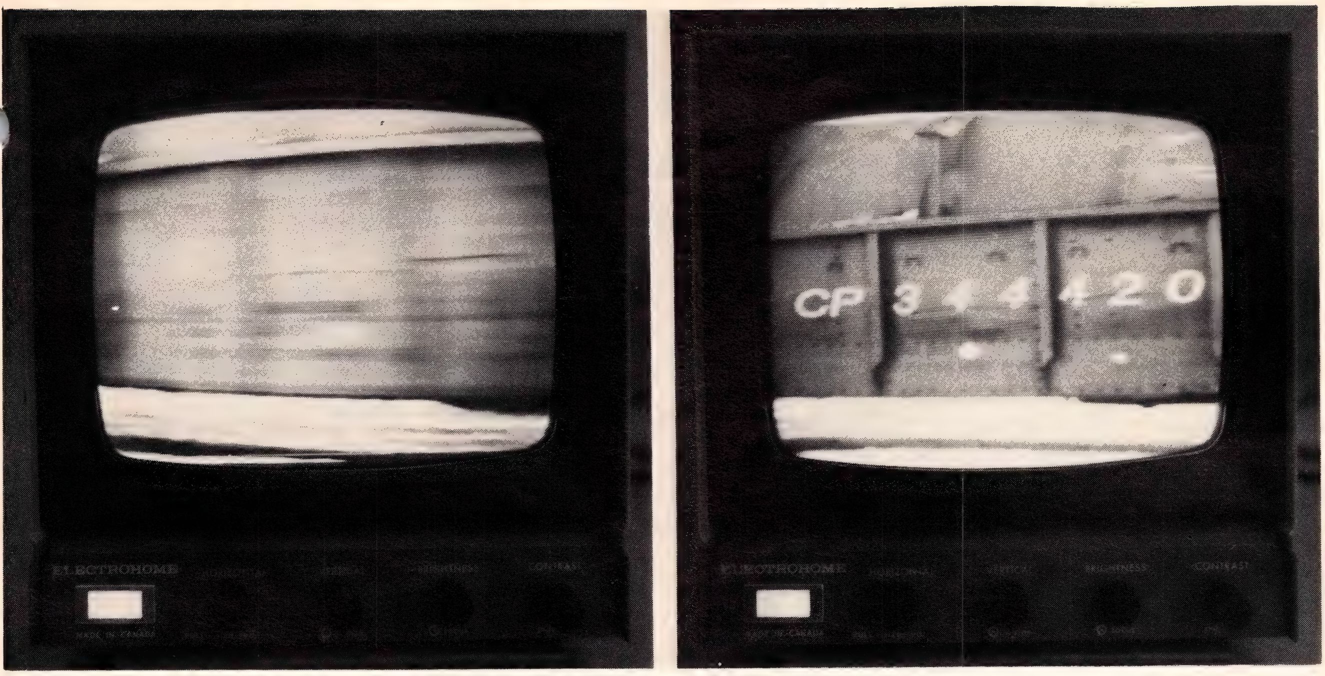


CP Rail's new closed-circuit television (CCTV) system overcomes the blurring problem (left) normally encountered when the tape of a train passing at speed is stopped to view a single car. When the new system's tape is stopped the same car becomes clearly legible (right).

Instant TV Replay to Accelerate Rail Freight Movement in Canada

Freight cars are to appear in videotape instant replay when CP Rail starts televising freight movements toward the end of the year. TV technology is expected to increase the speed and efficiency of CP Rail freight movement across the whole of Canada.

Agincourt Yard in Toronto is scheduled to unveil CP Rail's first "Electronic Eye" closed-circuit television systems (CCTV) in December. Feasibility studies are under way for St Luc in Montreal, and applications to other major yards such as Alyth in Calgary will be looked at in the coming year.

"The new system, designed, developed and engineered to CP Rail's specifications by the Closed Circuit Television Corporation of Montreal (CCTC), a subsidiary of ADT Security Systems, will enable railwaymen to read car initials and numbers with better than 95% accuracy at train speeds up to 60 miles per hour," said Tom Munford, CP Rail's Manager of Communications. "This is accomplished by making a videotape recording of the train in a series of individual frames similar to motion picture film."

This will eliminate the need for car checkers to write down or check off car numbers when trains arrive or depart. The use of a videotape recorder will allow the train movement to be reviewed whenever information is needed.

The playback unit is modified so that, despite the speed of the train passing the camera, the playback can be adjusted to a comfortable speed (6-8 mph), or it can be stopped in order to look more closely at a faded or dirty number.

The system will improve efficiency in yard operations by providing readily available and accurate information about the sequence of cars on arriving and departing trains. Terminal detention costs will be pared, because trains will be able to move in and out of yards at speeds of up to 20 mph which is the maximum permissible yard speed.

Mr Munford said company tests in Agincourt Yard had proved that the new CCTV with its individual picture allows car numbers to be read more accurately than by the 14-year-old three-camera standard TV system without videotape recorders, or by a checking clerk standing at track-side. "Of 100 cars going by, the yard checker missed four numbers, the clerk reading off our current TV system missed four numbers, while a checker using the new system missed just one number, and that number was badly worn away in any case."

Standard CCTV systems have a number of limitations when recording car numbers on moving trains. The numbers become increasingly blurred as the speed of the train increases and are difficult to read accurately at speeds above 6-8 mph; when the playback is stopped, the picture is fuzzy and badly distorted. The new system corrects these limitations.

There has been increasing railway interest in CCTV systems since the Association of American Railroads decided to abandon the color-coded automatic car identification (ACI) system. This system required all railroads to apply color-coded labels representing the car number to the sides of all freight cars. The average accuracy of the system was only 80% and the cost of maintaining and replacing the labels was high.

One advantage of CCTV over a second-generation ACI system is that each railroad can install systems suited to its individual needs. There is no need to wait for the entire industry to standardize on second-generation ACI systems.

CCTV's improved accuracy will also provide more accurate information for storage in central data banks. This data is needed for efficient car management and accounting, thorough costing studies, and rapid provision of shipment information to customers.

"Although train speeds in yards are limited to 15-20 mph, our objective has been to install a system which will permit a yard clerk to record or check the initials and numbers of cars on a 60 mph train with better accuracy than a checker watching the same train pass at six mph."

* * *

CCTV systems for railroad yards are split into four independent components: the trackside cameras for picking up the train movement; the transmission system between the cameras and a videotape recorder; the recorder in the customer service centre; and a viewing unit to play back the videotapes to list or check the cars' initials and numbers.

The new Agincourt installation will have six camera-recorder combinations. Two of the cameras will be equipped with zoom lenses and controls so that they can focus on trains passing on any one of three tracks. The cameras feature a special device engineered and manufactured by Closed Circuit Television Corporation which produces and records a series of 1/1000-second frames instead of a continuous recording.

A backdrop is required behind the track so that the cameras are not affected by the high contrast caused by space between cars or the passage of flatcars.

High-intensity diffused lighting is an integral part of the system. The lights are turned on when the cameras are activated at night or whenever the light level falls below 700 foot-candles in the day.

The videotape recording is made with high-speed Panchromatic black and white TV cameras. The use of colour cameras was considered, but it was found that it did not improve the percentage readability of the car numbers, and the extra cost was considered unnecessary.

The cameras are mounted above track level on poles set in a concrete foundation to prevent vibration. They are housed in special all-weather containers, equipped with heaters, blowers and defrosters which use sensors to regulate the temperature and humidity in conditions which range from −40° to +50° (Celsius).

Transmission between cameras and recorders will be carried over approximately 39,000 ft of coaxial cable attached to existing poles along the right of way. By routing the coaxial cable past as many as three cameras and multiplexing the video signals, the total cost of the transmission system has been minimized. In future systems, consideration will be given to using high-frequency microwave or fibre optic cables where there could be an economic or operating advantage.

The cameras on the departure tracks are operated manually. When the departure train has been marshalled, the yard co-ordinator presses the switch associated with the track on which the train will pass and uses a microphone to record the name and number of the departing train on the audio track of the video cassette.

Recorder cabinets at the customer service centre house up to four recorders and their status indicators, as well as four monitors to show what is being recorded on the videotapes. The 7 ft high cabinets are equipped with their own forced ventilation and air filtering systems. A clean environment with proper temperature and humidity is important.

The camera and recorder system is normally in the stand-by mode — camera off, recorder idle, monitor blank, outdoor lights off. Sensing devices on the arriving tracks automatically turn the cameras on and off.

Should a train stop in front of a camera, the lack of movement in the picture automatically switches the recorder into time-lapse mode until the train starts up again. When the train has passed, track sensors are also used to turn off the camera, lights and recorder. Seconds after the recorder has been turned off, an audio and visual signal will alert the operator that a train has been recorded. The operator then replaces the cassette in the recorder and writes the train number on the case of the cassette removed.

Two playback consoles are provided. Each consists of a specially designed desk incorporating a video recorder identical to the ones used to record the train movements. A nine-inch video monitor is set at an angle at the back of the desk in front of the operator. This arrangement gives sufficient space on the desk surface to write or check car listings. The recorder's playback controls are easily reached.

Regardless of the speed of the recorded train, the operator can adjust the playback speed of the monitor to a comfortable speed for listing or checking the numbers. A multi-position foot control is provided to permit the operator to advance or stop the tape. When the picture is stopped, it looks like a photograph, with no distortion or fuzziness.

When a train recording has been checked, the videotape is re-wound and stored for a pre-determined period or re-use. The cassettes have a 20-minute recording capacity accommodating two 100-car movements at six mph or up to five movements at 15 mph. Normally, the tapes are removed after each train has passed, but if for any reason a tape is not removed, the next train movement will not be missed. High-quality is essential to ensure maximum readability of the car numbers.

The cassettes are provided with a plug to prevent accidental erasure of train recordings. When the plug is removed the recording cannot be erased. The plug is replaced when the cassette is put into the recorder so that anything on the tape is automatically erased before the tape reaches the recording head.

The contractor provides personnel training and operating instruction manuals, together with full maintenance including parts and labor twenty-four hours a day, seven days a week. CP Rail will install supporting structures for all cabling, electrical power for reading units, lighting systems, backdrops, recording cabinets and playback desks.

A patent application is being prepared by Closed Circuit Television Corporation for the entire system.

The Window Seat

The Chief Executives of the Australian and New Zealand railway networks met in Melbourne on 11-13 October 1978 for the annual Australian and New Zealand Railways Commissioners Conference.

From left: Mr T. M. Haywood (New Zealand); Mr A. S. Reiher (New South Wales); Mr K. A. Smith (Australian National Railways); Mr A. G. Gibbs (VicRail-chairman); Mr R. J. Pascoe (Western Australia); Mr P. J. Goldston (Queensland).

Plans for a national body to coordinate and develop "The Case for Rail" took a major step forward last month when a building to house the Australian Railway Research and Development Organisation (ARRDO) was officially opened by the Federal Minister for Transport, Mr Nixon, at a function hosted by the inaugural Chairman, Mr A. G. Gibbs. Members of the Board of ARRDO, which comprises the chief executives of the Australian rail systems and the Secretary of the Department of Transport, Mr C. C. Halton, were present for the opening. Among the Board's guests were the Victorian Minister of Transport, Mr R. R. Maclellan, and representatives from the transport industry.

ARRDO is an ambitious undertaking by Government rail systems in Australia and the building at 576 Lonsdale Street, Melbourne, is evidence of their support and commitment. *Network* intends publishing more on ARRDO's activities in the New Year.

* * *

Westrail has been closely involved with the minting, in Western Australia, of next year's 150th Anniversary medallions. In mid-1978 the Perth Mint found they had production problems and approached Westrail's Midland Chemical Laboratory to check on facilities for hard-chrome plating of dies used in manufacturing the medallions.

Westrail set up an experimental electro-plating bath and a series of tests to gauge whether they could accept the responsibility. The tests proved that the work produced was of extremely high standard, and delighted Mint officials asked Westrail to continue plating the remaining dies.

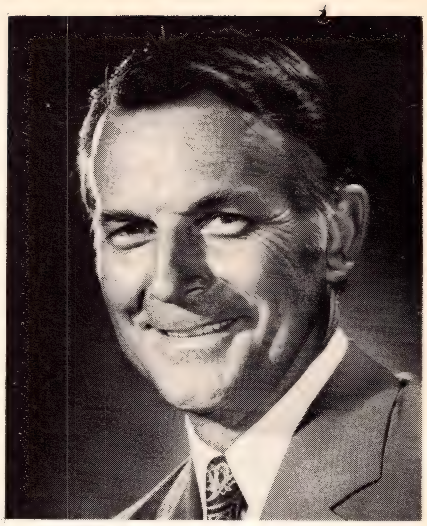
In explaining the complex minting, Perth Mint Supervisor, Doug Holland, said that designs for the medallions were sent to Canberra Mint where detailed plaster casts were made. They were then reduced to the correct size in metal and a master die produced.

Mr Holland said that the dies were then sent back to Perth where they were used to manufacture working dies, allowing the masters to be safely stored. "We were extremely careful at this stage of production; it takes about two weeks to manufacture an acceptable working die. On completion the dies were sandblasted and polished and sent to Westrail's workshops for hard-chroming."

Mr Holland pointed out that if the dies had not been hard-chromed they would only have been able to "stamp out" 50 medallions. With chroming, 10,000 or more can be produced from the one die before it is due for sandblasting and re-chroming.

"Striking the 150th Anniversary medallions has been one of the highest quality works undertaken by the Perth Mint and we have appreciated the part that Westrail has played in assisting production," Mr Holland added.

Five hundred gold medallions, 15,000 silver medallions and 50,000 each in bronze, brass and cupro-nickel have been struck, each of the five categories with its own particular design.



Westrail's Comptroller of Stores, Mr W. Trevor Tobin, has been appointed Secretary for Railways following the appointment of Mr A. E. Williams as Assistant Commissioner.

Mr Tobin began his railway career in 1944 as a junior in the City Station telegraph office. He subsequently worked as Station Officer at several country centres, becoming Statistical Officer in the Traffic Branch Standard-Gauge Research Section in 1961. In the same year he was admitted as an Associate of the Australian Society of Accountants. He is also a member of the Chartered Institute of Transport.

Following experience in several branches as an Office Work Analyst, he became a senior district officer in Traffic Branch Eastern, Northern and Central Districts. In 1969, as leader of a newly-formed Economic Planning Group in the Secretary for Railways Branch, he participated in the setting up of Westrail's formal capital expenditure evaluation procedures.

In 1971 Mr Tobin was appointed Assistant to the Director General of Transport on a two-year secondment. In this position he aided in the development of transport policy recommendations and evaluation of investment proposals.

Appointed Comptroller of Stores in 1974, Mr Tobin has been closely involved with the development of a computerised "on-line" Supply Management System, incorporating the NATO materials classification and cataloguing technique.

* * *

As part of an on-going scientific examination and modernisation of Victoria's railway bridges, a 60-year-old girder was recently stressed and tested to breaking point by the Monash University School of Civil Engineering.

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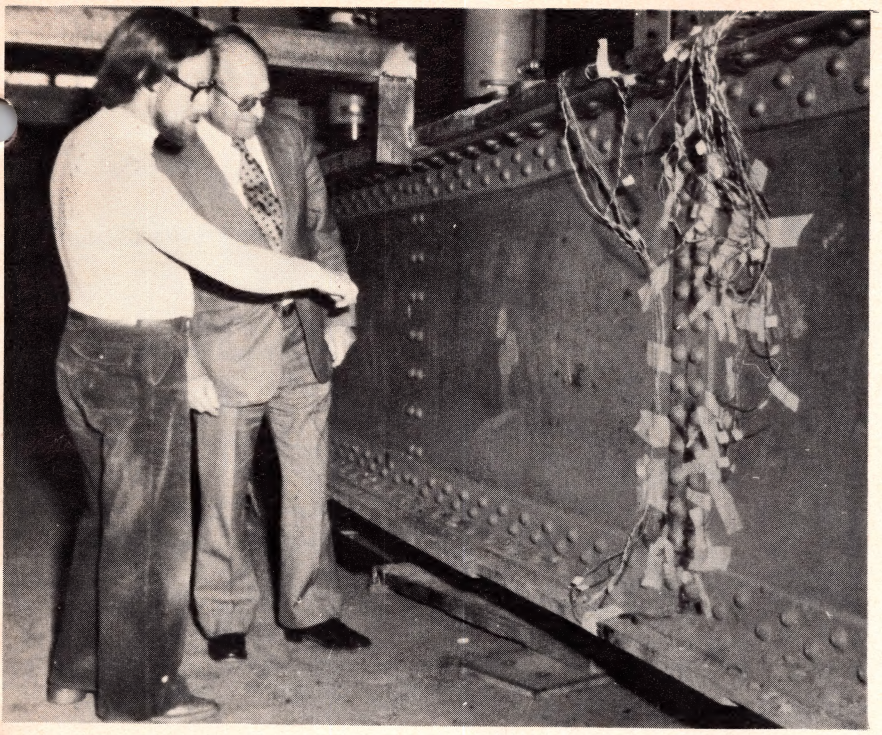

Professor Paul Grundy (left) and VicRail's Chief Design Engineer, Mr Jack Emmins, check the 12-tonne girder after its rigorous ordeal.

This bridge, similar to that on the Ballarat line where the test girder came from is typical of many still in service after more than 50 years.

Three massive hydraulic jacks and the girder itself were wired to various monitoring devices and computers, and a pressure of more than 250 tonnes was applied before the girder buckled.

The 12-tonne, 18-metre girder had been removed from Ballarat's old main-line Caledonian Bridge. The tests proved that this type of girder is far stronger than previously believed. This particular one had withstood a simulated load of four passing trains.

Despite increasing loadings, many of the girders of this type now in use may not have to be replaced. Extended life for these girders will still ensure adequate safety margins in VicRail's daily operations.

* * *

In its October issue, *Railway Gazette International* summarizes a report presented by British Rail to the Department of Transport as recently as 26 September on revised proposals for a Channel tunnel. The report concludes that a single-track tunnel is technically feasible and would produce a return of up to 15 per cent on a £600m investment. A parallel report by the French Railways to the French Government is expected in a few weeks.

Discussions between the two governments are then expected, with a view to authorising more detailed studies and analyses.

The intention is that series of passenger and freight trains would pass through in each direction at intervals of about three hours. There would be no passing loops. The practical capacity is estimated to be 120 trains a day, which would permit 8 million passengers and 8 million tonnes of freight to be carried yearly.

Sir Peter Parker, Chairman of British Rail, has ventured to suggest that the tunnel could be open by 1988 if debate is not unnecessarily prolonged.

British Rail's recommendation has been promised "urgent and careful consideration".

* * *

There has been much hand-wringing over the poor condition of much of the railway track in the United States. An editorial in *The Economist* of 2 September, noted by *Railway Gazette International,* "shed some light on the other side of the coin."

"It seems that interstate highways are suffering badly from tractor and trailer units which are now allowed to carry loads of 36 tonnes in most states. Federal taxes on fuel and accessories amount to $8000 m a year, but the states get only a fraction of this to help to pay for highway repairs.

"Damage from heavy axles is so severe that complete reconstruction of the paving is often needed. Drivers recently resorted to strike action over the condition of 1-80 in Pennsylvania, and now the Federal Highway Administration has estimated that $25,000 m must be spent annually for the next 12 years to restore and hold the position as it was before these heavy vehicles became commonplace.

"Nothing like this amount is available, 'Perhaps this is not altogether a tragedy,' says *The Economist,* as 'it may lead shippers and passengers to give more consideration to the railways'."

* * *

A daily Motorail service has been introduced on the Overland Express between Adelaide and Melbourne. Passengers are able to transport their cars on a special two-tier carrier wagon, attached to the Overland each night.

Cost of the Motorail service is $35 single for passengers' vehicles and $52.50 for unaccompanied vehicles. The fare on the Overland is $21 economy-class and $32 first-class, sitting up.

The Overland car-carrying service is one of the cheapest Motorail services offered in Australia. In introducing it, the Overland joins a number of Australia's prestige passenger trains, including the Southern Aurora between Sydney and Melbourne, the Trans-Australian Express to Perth, and the Gold Coast Motorail between Sydney and Murwillumbah.

* * *

British Rail scientists are conducting experiments on a 10kWh sodium sulphur battery at the Railway Technical Centre at Derby. The aim is to produce a reliable chargeable battery five times lighter than today's lead acid battery yet with the same output.

Major progress has been made since 1972 when the decision was taken to change the previously adopted method of cell construction and place the sulphur electrode inside the sodium electrode. The British Rail battery has 176 cells built from components designed to be easily manufactured using mass production techniques. Sixteen different experiments within the battery are monitored by equipment which records every finite detail as the battery is charged and then discharged at differing rates.

The emphasis of the research now is on the behaviour of the cells when combined to form batteries. Initial tests have demonstrated the safety, reliability, ease of assembly of the current cell design and have also shown that the cell capacity is not affected by charging and discharging. Work will continue towards the construction and evaluation of batteries with extended power output which British Rail hope will be the forerunner of the sodium sulphur battery in rail traction.

The project is part of a nationally co-ordinated programme of research sponsored by the British Government, which is being carried out by Chloride Silent Power Ltd, British Rail and the United Kingdom Atomic Energy Authority.

* * *

Chattanooga's former Terminal Station, home of the Choo Choo, one of the world's best-known trains, is now the Chattanooga Hilton Inn. Passengers who once waited in the main lobby, beneath four huge chandeliers, can now have lunch or dinner there.

A former false ceiling has been removed, opening to view both the Grand Dome and the decorated heraldic emblems on its underside. The former Terrace, Crystal, Fountain and Director's Rooms also form part of the restaurant.

Overnight visitors stay either in an established room or in one of a fleet of 24 passenger carriages, restored in Victorian style, with modern conveniences and divided by sound-proof partitioning into 48 suites. Each car unit is 10 ft wide by 40 ft long.

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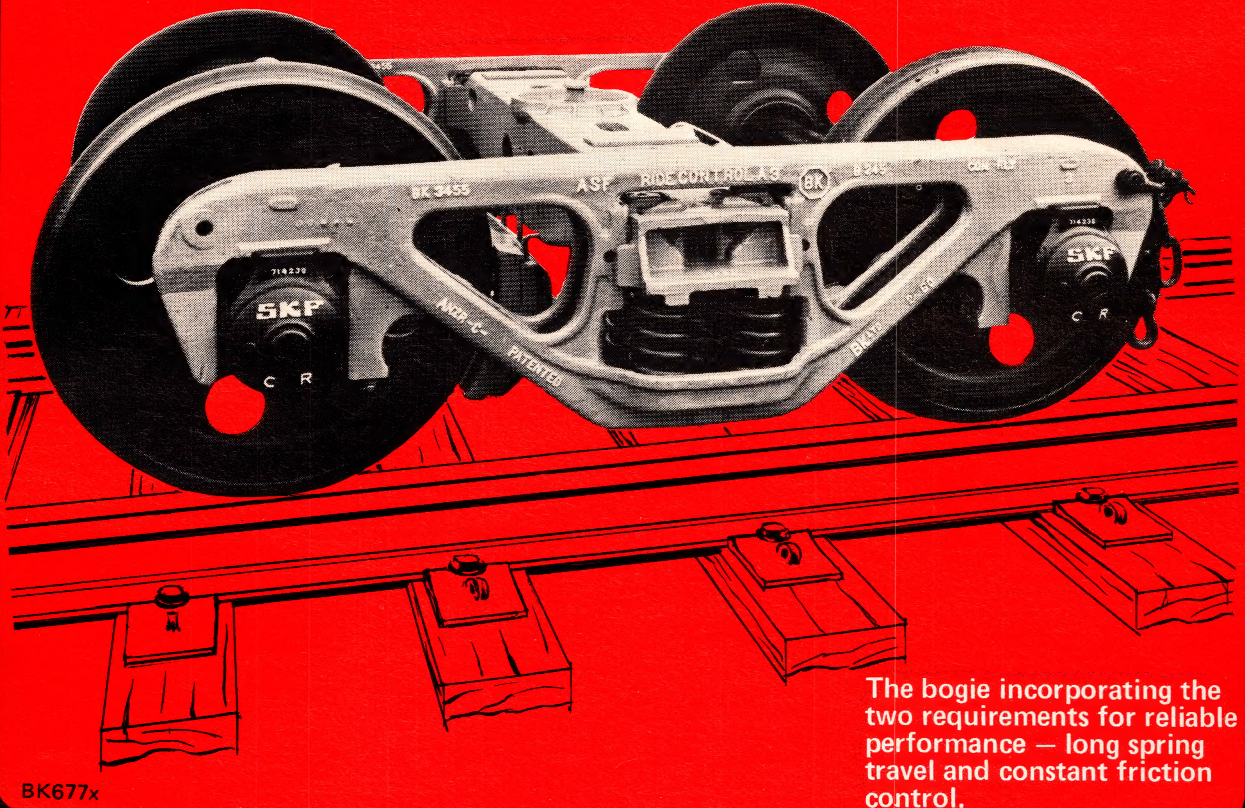

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